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Forest Service

West Shore Community Wildfire Protection Project Environmental Assessment

Almanor Ranger District, Lassen National Forest **September 2020**

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Introduction

The Forest Service is proposing to implement an array of management activities on 5,216 acres to reduce the threat of wildfire to communities and ecosystems, restore forest ecosystem health, and improve recreational experiences on National Forest System (NFS) lands on the Almanor Ranger District (ARD) of the Lassen National Forest (LNF) along the west shore of Lake Almanor, including 166 acres of Plumas National Forest (PNF) and 27 acres of private land based on coordination with PNF leadership and in collaboration with Collins Pine Company leadership. This environmental assessment (EA) has been prepared to determine whether implementation of the West Shore Project may significantly affect the quality of the human environment and thereby require the preparation of an environmental impact statement (EIS) or to support a finding of no significant impact (FONSI). By preparing this EA, the LNF is fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA). In addition, we are complying with California State Senate Bill 901 and we plan to implement the project on private land utilizing the California Master Cooperative Wildland Fire Management and Stafford Act Response Agreement (CFMA).

The West Shore Community Wildfire Protection Project (West Shore Project) covers an area of 6,311 acres with elevation ranging from approximately 4,500 feet at lake level to roughly 5,800 feet on surrounding ridges. The West Shore Project is dominated by mixed conifer forest stands, with several small vernal pools and meadow features interspersed across the landscape. Past management and the exclusion of fire have altered forest structure and successional processes throughout these areas. Overstocked stands of mixed conifers, characterized by a closed canopy and abundant surface and ladder fuels, occupy much of the West Shore treatment area. These conditions, coupled with the West Shore's location at the top of the Feather River drainage, where terrain and weather patterns have historically aligned to create explosive fire growth, have made this a high priority Wildland Urban Interface (WUI) area. The West Shore Project area was evaluated for opportunities to reduce fuel loading to promote forest health and protect communities, restore resilience to the ecosystems, and improve recreational experiences for the many users of Lake Almanor and the Lake Almanor Recreation Trail, as well as recreation throughout adjacent National Forest Service lands.

The West Shore Project incorporates information from the 2019 Conservation Strategy for the California Spotted Owl in the Sierra Nevada (version 1.0) and will update the project appropriately under Regional Forester direction based on future revisions and the Frequently Asked Questions (FAQs) document. The proposed action is designed to be consistent with the 1992 Lassen National Forest Land and Resource Management Plan (LNF LRMP) and 1993 Record of Decision (ROD) as amended by the Sierra Nevada Forest Plan Amendment (SNFPA) Final Environmental Impact Statement and ROD (2004), and the Management Indicator Species Amendment (2007).

The US Forest Service made minor changes to the proposed action described herein following the distribution of the West Shore Community Wildfire Protection Project proposed action for public scoping in fall 2019. Those changes are denoted by notations of "addition" or "clarification."

Collaboration

The LNF has developed the proposed West Shore Project in collaboration with the South Lassen Watersheds Group (SLWG) collaborative. The LNF is partnering with SLWG to accelerate restoration activities across an 800,000-acre landscape covering the entirety of the ARD, as well as a mix of industrial private timberlands, National Park Service land, and other land ownerships. With the SLWG, LNF is working to increased pace and scale through a collaborative planning and implementation efforts

for the future of forest management, climate resilience, and economic development in critical upper watersheds. The SLWG was launched in 2017 and includes a diverse mix of local partners interested in pursuing high priority, large-scale, multi-jurisdictional projects to improve forest and watershed health, reduce wildfire risk, protect critical habitat, and support local contractors and industry. The stakeholders engaged in SLWG, including adjoining landowners and community-based organizations, identified the West Shore Project area as a critically important area to improve forest resilience and reduce the threat of wildfire to communities. Members of the SLWG provided additional staff capacity and expertise to aid in the preparation of this EA. The West Shore Project represents a collaborative approach to planning that will enable accelerated restoration of important landscapes across National Forest Service lands, other public lands, and adjacent private landowners as part of a cross-boundary strategy to enhance ecosystem resilience and protect communities. This project is one of the first steps in implementing the collaborative vision developed by the SLWG. Appendix A contains additional information on the collaborative efforts during project development.

The Maidu Summit Consortium and the South Lassen Watershed Group

An active participant in the South Lassen Watersheds Group, the Maidu Summit Consortium, supports landscape-scale restoration by providing consultation services for strategic planning and project prioritization and expertise through identification of priority areas for the use of Maidu Traditional Ecological Knowledge. Representatives from the Maidu Summit Consortium regularly collaborate with the SLWG to better inform project planning on the West Shore Project.

The creation of the Maidu Summit Consortium underlies the unity of Maidu Community members, organizations, and tribes in the mitigation of ongoing cultural disruption and desire for both cultural restoration and a return to a stronger kinship with the land. The non-profit Maidu Summit Consortium is composed of unincorporated community groups, federally recognized Rancherias, and petitioning aboriginal rights governments that include: Greenville Rancheria, Roundhouse Council Indian Education Center, Susanville Indian Rancheria, Mountain Maidu Preservation Association, Maidu We'ye, Tasmam Koyom Cultural Foundation, Tsi-akim, United Maidu Nation, and the Maidu Cultural & Development Group.

Maidu Land Management

Maidu practitioners have long engaged in active management of ecological diversity, including optimizing the health of plant and animal species, forests, and water through a continued kinship with the landscape. Intense interaction to ensure forest health was practiced through the use of landscape-scale burning. Maidu burning of the forest floor and meadows induced rapid nutrient recycling while also mitigating generations of debris and disease. This was critical for a well-functioning ecosystem and a diversity of plants in the understory for more forage for wildlife, seed eaters, and other affected members of the food chain. Due to ethnocentric perspectives imposed by non-Maidu settlers, including land managers, industries, and government agencies, Maidu Traditional Ecological Knowledge became nearly absent from the ecosystem. Historical and cultural sites were drowned by the filling of reservoirs for hydropower.

"Looking at Lake Almanor, Butte Valley Reservoir, Hamilton Branch, and Mountain Meadows Reservoir, we can intuit that a large ecological disruption has occurred in these areas. A land base that was once meadow, forest, stream, springs, ponds, is now water – a series of large reservoirs." – Lorena Gorbet, Maidu Culture and Development Group.

In 1998, Congress sent out a nationwide call for programs to test "alternative techniques" on national forests. The Maidu submitted a proposal using a newly branded acronym – Traditional Ecological Knowledge (TEK) – which set the stage for the Maidu Stewardship Project on the Plumas and Lassen

National Forests. A further paradigm shift continues in wildfire management in northern California today, and land managers have seized opportunities to work with California Tribes to integrate western science and indigenous science systems into a common practicality for a greater range of forest ecosystem understanding (Cunningham and Bagby, 2004).

Lorena Gorbet, The Maidu Cultural and Development Groups Lead, describes that in using TEK, the Maidu will be taking care of their relations — the plants, animals, soil, and water. Maidu land managers use the Maidu language to rebuild this relationship with the land slowly, acknowledging that TEK can and does evolve over time to integrate with non-Maidu methodology to caretake for the land (Gorbet 2004).

"We have a great longing to reconnect with the land and steward it as our ancestors did. We haven't had an opportunity to do that in a very long time." – Farrell Cunningham, former Maidu Summit Consortium Chairman

The challenge for land managers lies in the fundamental dynamic tension between the need for periodic fire to sustain healthy wildlands and cultural lifestyles, and interests in suppressing wildfires to minimize safety threats to those living in the WUI, where homes and wildlands intermingle. The West Shore Project represents a first, small step in an ongoing effort by the Maidu Summit Consortium and all partners from the SLWG to integrate TEK with western science and land management principles.

Project Location

The project boundary lies adjacent to Lake Almanor's western shore, beginning just south of the Lake Almanor West community and ending at the Canyon Dam Boat Launch facility. From the Canyon Dam boat launch facility, the project area expands southwest from the shore crossing California State Highway 89, through the community of Big Meadows, and back to the Lake Almanor West community (Figure 1. West Shore Community Wildfire Protection Project Vicinity Map.Figure 1). The proposed project area is located in Management Area 38: T. 27N, R. 8E, Sec , 18, 19, 20, and 30; T27N, R7E, Sec. 3, 4, 9, 10, 11, 13, 14, 15, 16, 23, and 24; Mount Diablo Meridian. The project area includes portions of the following sub-watersheds: Lower West Shore Lake Almanor, Ohio Creek, Upper Fanani, and Upper West Shore Lake Almanor. The West Shore Project area encompasses approximately 6,311 acres with approximately 5,216 acres proposed for various thinning and post-thinning treatments.

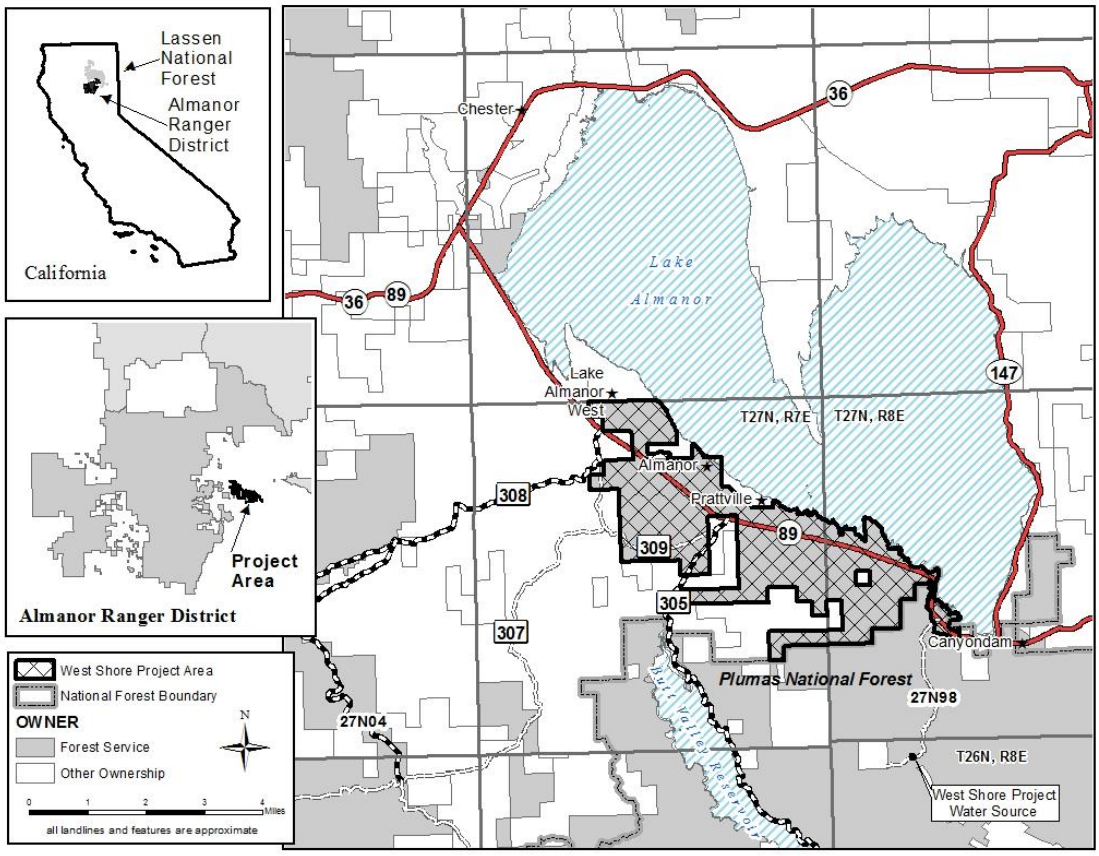

Figure 1. West Shore Community Wildfire Protection Project Vicinity Map.

Maidu Aboriginal Lands

The Maidu Tribes traditionally inhabited the northern Sierra Nevada and southern Cascades between Lassen Peak and the American River. They divided themselves into valley, foothill, and mountain tribes, but once lived in waterways rich with trout and salmon and a landscape with wild game including deer, bear, elk, and wild turkey. Three groups of closely related peoples are referred to as the Maidu: the Mountain Maidu of Plumas and Lassen counties, the Konkow of Butte and Yuba counties, and the Nisenan of Yuba, Nevada, Placer, Sacramento, and El Dorado counties. The ancestral homeland of the Mountain (Yamani) Maidu includes the West Shore Project area, and it extends from Eagle Lake and Honey Lake in Lassen County east to Sierra Valley, south to the Feather River Canyon, and west to Mount Lassen (Ascent Environmental 2017).

The Mountain Maidu, a federally unrecognized tribe of around 2,000 people living south of Lassen Peak and Lassen Volcanic National Park, historically lived in small settlements in valleys in the Feather River watershed in the northern Sierra Nevada. Evidence of Worldmaker's journey is imprinted on this landscape. Their people traveled for many miles for large bear dance ceremonies, where people met for trade and exchange throughout the Maidu homeland. Oral histories of the Maidu people place the estimated population of the Yamani Maidu in the Upper Feather River watershed at around 22,000 people at the time of European contact. This population was sustained through intentional stewardship of the land to maintain ecosystem health, species diversity, and interactions between people and place that provided both material and spiritual well-being. There are thousands of significant Maidu cultural sites in the watershed, including strong cultural connections by surrounding tribal communities to Homer Lake, which drains into the Mountain Meadows area in the Lake Almanor Basin.

Landscape Character

Topography varies from gently sloping lakeside terrain to steeper sloped ridges reaching approximately 5,800 feet in elevation. Although the West Shore Project area terrain has primarily gentle slopes, it is adjacent to the Feather River drainage – a steep and deep river canyon that is aligned with the prevailing southwesterly winds. When winds align with drainages, fire burns with greater intensity. Similarly rugged drainages feed into the Feather River Canyon, making it a difficult place to access. Coupled with hazardous levels of ladder and surface fuels throughout this connected area, it presents a considerable challenge for fire managers when wildfires occur on high fire weather days. California Highway 70 and a railroad parallel the river, contributing to a high frequency of human-caused fire occurrences. Multiple notable fires have occurred in the Feather River drainage, with two in recent years that made significant runs toward the West Shore Project area. The Storrie Fire (2000) started along the Feather River and burned 52,000 acres of brush and timber. The Chips Fire burned in the same footprint and extended northeast beyond the Storrie Fire twelve years later. The fire became established in multiple rugged drainages, eventually growing to 75,431 acres and coming within one mile of Prattville and less than a quarter mile of Big Meadows in the West Shore Project area.

Species composition and structure of forest stands are influenced by elevation, landscape position, aspect and historical management practices and fire histories. Forest stands within the West Shore Project area consist primarily of mixed conifer stands, composed of sugar pine, ponderosa pine, Douglas-fir, incense-cedar, and white fir. The West Shore Project area includes both natural and planted pine stands. There are also small inclusions of aspen stands and meadow complexes.

Wildland Urban Interface

The West Shore Project area surrounds several communities, private land parcels, and tribal land parcels. The proximity of the West Shore Project to these communities underscores the need for timely management action. The combined communities of Lake Almanor West and Prattville have approximately 340 residents, but the resident count fluctuates seasonally as a high number of second homeowners or vacationers are not counted in the census. Big Meadows is a smaller community, with approximately 12 homes. The project area is used heavily for recreation purposes, primarily in the summertime, and brings a significant economic pulse to the area during the spring and summer seasons. Four campgrounds, a marina, two public beaches, two public boat ramps, and a paved bike trail are within the project area, as well as multiple restaurants and other service-based businesses. The combination of residential communities and recreational usage creates one of the most substantial wildland-urban interface areas on the ARD of the LNF.

Purpose and Need for the Proposal

The purpose of the West Shore Project is to reduce the threat of wildfire to communities and ecosystems, restore forest ecosystem health, and improve recreational experiences on National Forest Service lands on the ARD of the LNF on the west shore of Lake Almanor. Vegetation management treatments would be designed to reduce hazardous fuels, including reducing the number of hazardous trees near facilities and infrastructure, and the risk of high-intensity fire in the WUI, increase forest health and vegetative diversity, and provide an economic benefit to the local community. Objectives developed for the project are in line with Region 5 Ecological Restoration Leadership Intent (USDA FS 2011) and are consistent with goals and strategies for fuels and vegetation management in the LNF LRMP as amended by the SNFPA ROD. The West Shore Project area is within the Tier 2 High Hazard Zone identified by the California Department of Forestry and Fire Protection as areas that have significant tree mortality as well as significant community and natural resource assets. Specific objectives include:

1. To reduce wildfire threat to human communities, ecosystems, and wildlife habitat.
2. To improve forest health, increase vegetative diversity, improve meadow and riparian area condition, and provide an economic benefit to the local communities.
3. To improve recreation experience through facilities improvements and access management.

Objective 1: To reduce wildfire threat to human communities, ecosystems, and wildlife habitat.

Existing Condition: Currently, overstocked stands of mixed conifer occupy much of the project area. They are characterized by a largely closed canopy with low canopy base heights and abundant surface and ladder fuels. In addition to the fire hazard presented by heightened levels of surface, ladder, and canopy fuels in the West Shore Project area, pockets of overstory trees have experienced high levels of tree mortality. In firefighting operations, dead and dying trees not only present considerable hazards to firefighters but can also exacerbate fire spread by acting as spotting sources and receptors. Each of these elements contributes to the hazardous fuels condition within the West Shore Project area (USDA - FS 2018).

The West Shore project area also contains important wildlife habitat, notably for northern goshawk and California spotted owl (CSO). Large-scale, high-severity wildfire is one of the biggest threats to CSO occupancy and habitat use (USDA – FS 2019). The Chips Fire burned at moderate and high severities adjacent to the Rocky Point owl territory and Prattville goshawk territory, threatening a long-term loss of habitat for both territories. Trends in high-severity fire are likely to continue to increase in the absence of active forest restoration (Stephens et al. 2016a, USDA – FS 2019). Recent research has shown CSOs select for tall tree cover (more than 160 feet tall) and against short tree cover (less than 53 feet) (North et al. 2017). In addition, historical management that has increased homogeneity of forest structure (i.e. fire suppression, even-aged harvest, and pine plantations) may be contributing to declines in CSO populations and their prey on National Forest Service lands (Hobart et al. in review in USDA 2019). Owls benefit from small openings, areas with less than 40 percent canopy cover, and edges located outside of owl core areas for foraging (USDA – FS 2019). Existing stand structure in and around the CSO home range core area (HRCA) lacks the heterogeneity of the highest quality CSO habitat.

The communities of Lake Almanor West, Prattville, and Big Meadows are located in the project area, immediately abutting and intermixed with National Forest Service lands. The community of Lake Almanor West is a designated Firewise Community, and the community of Big Meadows has an active, ongoing fuel reduction project; however, all three communities face fire hazard from adjacent National Forest Service land and represent possible sources of human-caused ignitions with potential to transmit fire to National Forest Service land. Numerous facilities and infrastructure are within the West Shore Project area, including California State Highway 89, Forest Service campgrounds and day use areas, and electrical distribution lines. Adjacent to or within these public features are forested stands exhibiting the same overstocked conditions, insect and disease infections, and drought-related mortality as described in the section above. Dense stand conditions contribute to poor tree health and increased number of dead or dying hazard trees. Several areas along roads, trails, and recreation facilities in the West Shore Project area contain high numbers of hazard trees that pose a risk to public safety as they deteriorate and fall. In addition, trees close to California State Highway 89 block a recovery zone for vehicles[1].

Management Direction: The 2004 SNFPA ROD emphasizes reducing threats to communities and wildlife habitat from large, severe wildfires, and making demonstrated progress in moving acres out of unnaturally

[1]The California Department of Transportation defines the clear recovery zone as an unobstructed, relatively flat (4:1 or flatter) or gently sloping area beyond the edge of the traveled way that affords the driver of errant vehicles the opportunity to regain control.

dense conditions. Goals for managing fuels described within the 2004 SNFPA ROD (pp. 34 and 35) include: 1) strategically placing fuel treatments across landscapes to interrupt potential fire spread; 2) modifying canopy fuels to reduce the potential for spread of crown fire; and 3) removing sufficient material in treatment areas to reduce wildland fire intensity, thereby contributing to more effective fire suppression and firefighter safety. Desired conditions, management intent, and management objectives as well as standards and guidelines for fuels treatments, guide managers to design effective fuels treatments while incorporating needs for retaining key habitat elements for Forest Service sensitive species, including the CSO (SNFPA ROD, pg. 34, pp. 45-48, pp. 49-52, pp. 53-54, and pp. 59-61). Vegetation management actions are guided by standards and guidelines that ensure important habitat for old forest associated species, including the CSO, is maintained (SNFPA ROD, pg. 5, pp. 50-51, and pp. 59-61). SNFPA ROD management objectives emphasize retaining habitat in CSO PACs (SNFPA ROD pg. 7 and 45) as well as actively managing the forest to develop and restore habitat in HRCAs and general forest (SNFPA ROD, pp. 6-7, and pp. 46 and 48).

In addition to direction to manage threats from large, severe wildfires, the Chief of the Forest Service and the Pacific Southwest Regional Forester have stressed that the safety of the public and Forest Service employees is the Agency's central concern. In developed recreation areas and within the transportation corridors, hazard tree management is vital to everyone's safety. Line officers are responsible for annual inspection and management of hazard trees in campgrounds and other heavily used recreation areas (Forest Service Manual, FSM 2332). Forest Supervisors have a similar responsibility for the safe operation and management of roads and must "…to the extent permitted by funding levels, systematically provide for elimination of identified hazards." (FSM 7733.04c and FSH 7709.59).

Need for Action*:* In order to meet the desired conditions outlined by management direction for reducing wildfire threat to human communities, ecosystems, and wildlife habitat, action is needed to modify and reduce existing high levels of forest fuels. There is also a need to reduce the risk of trees breaking or falling within recreation facilities and along power lines and other infrastructure, maintain a safe recovery zone for vehicles along CA Highway 89, and reduce snag levels to improve firefighter safety during potential fire suppression actions to protect human communities. In addition, the current stand structure and historical and predicted fire behavior support a need to decrease surface fuels, reduce ladder fuels, and disrupt the continuity of forest canopy in order to improve fire resilience of existing stands by reducing the potential for detrimental effects of large-scale, high severity wildfire. Modifying forest structure will also protect tall trees and other habitat elements within and surrounding California spotted owl and Northern goshawk territories in the project area.

Objective 2: To improve forest health, increase vegetative diversity, improve meadow and riparian area condition, and provide an economic benefit to the local communities.

Forest Health and Vegetative Diversity:

Existing Condition: Vegetation communities within the West Shore Project area have changed over time as a result of past management actions, including fire exclusion, logging, reforestation (pine plantations), human-caused wildfires, prescribed fire, and the development of the Prattville, Lake Almanor West, and Big Meadows communities. Current conditions within the proposed West Shore treatment area include overly dense natural forested stands and over-stocked pine plantations with limited stand heterogeneity planted in the 1960s and 1970s. These dense conditions reduce tree vigor and increase stress on forest stands, making them more susceptible to insects, disease, drought-related mortality, and high-severity wildfire. Trees intolerant of shade, such as ponderosa pine, sugar pine, and aspen are at the highest risk of mortality.

Within the proposed treatment units, densities average over 735 trees per acre, and the total basal area averages 195 square feet per acre. The density of a stand is ultimately limited by resources such as soil

moisture and growing space. When a stand approaches 60 percent of the stand's maximum stand density index (SDI)[2], the inter-tree competition for resources and the risk of mortality from insect, disease, and drought begin to increase (Oliver 1995, Simonson 1998, Cochran et al. 1994). The stands proposed for treatment currently average 70 percent of maximum SDI[3]. Existing stand density measures are outlined in Table 1.

Table 1. Existing condition of proposed treatment areas within the West Shore project.

Treatment	*Percent max SDI average*	*Percent max SDI range*	*Basal area (sq.ft./acre) average*	*Basal area (sq.ft./acre) range*	*Trees per acre Average(trees > 1inch dbh)*	*Trees per acre Range (trees > 1inch dbh)*
Pine and Mixed Conifer Restoration	*71*	*42-118*	*200*	*120-328*	*750*	*120-2,100*
Plantations (Pine Restoration)	*83*	*66-103*	*150*	*114-180*	*700*	*545-900*

Source: GIS and stand exam data processed with the Forest Vegetation Simulator forest growth simulation model

Management Direction: Desired conditions for forest health in the West Shore Project area are stand densities that would support shade-intolerant pine and aspen tree species, improve tree health and vigor, and reduce threats from insects, disease, drought, and high severity wildfire (PSW Forest Health Evaluation for the West Shore Project Area (USDA – FS 2018); LRMP p. 4-2 and 4-3; 2004 SNFPA ROD p. 31, 41, 48 and 49, USDA FS 2011a).

Need for Action*:* In order to meet the desired conditions outlined by management direction for forest health, action is needed to support the health and restoration of shade-intolerant pine and aspen, improve tree health, and increase resilience to future stressors. The existing conditions support a need to reduce conifer densities to improve resilience to disturbance, such as high severity wildfire and epidemic levels of insects and disease. Reducing the density of forested stands will also accelerate the development of large trees and contribute to better growing conditions for shade-intolerant pine and aspen, thus increasing vegetative diversity.

Riparian Conservation Areas and Meadow Ecosystems

Existing Condition: Stream and riparian area surveys and field observations within the West Shore Project area document conifer encroachment on riparian vegetation, overstocked upland forested stands within the riparian conservation areas (RCAs), and increased fuel loading. In addition, the West Shore Project area contains numerous meadow complexes identifiable by a combination of vegetation, soils,

[2] Stand Density Index-Measurement of stand density index is a very useful tool to predict present or future susceptibility of a stand to drought-related or insect-caused mortality. The stand density index (SDI) is a quantitative measurement that expresses tree frequency and tree size into a standardized numeric value, or SDI. This numeric value can be used to compare different stands and different treatments.

[3] The maximum stand density index was calculated by the Forest Vegetation Simulator software, Inland California and Southern Cascades Variant, and is an average of the maximum stand density index for the individual species within the stand. The maximum stand density for ponderosa pine was adjusted from 430 to 365 based on Oliver 1995 and Oliver and Uzoh 1997.

topography, and hydrology. Historically, fire played a role in maintaining the spatial extent of these meadow communities by killing tree seedlings that established along the forest/meadow edges. The number and density of trees encroaching into the meadow communities in the West Shore Project area have increased to an average of 800 trees per acre since fire has been excluded from these ecosystems. The establishment of conifers within the meadows indicates a declining trend in meadow function, compromising the long-term sustainability of these meadows.

Management Direction: Desired conditions for meadows in the 2004 SNFPA ROD describe meadows that reduce peak flow velocities, decrease sediment loads, and promote surface water infiltration. Vegetation roots occur throughout the soil profile in meadows systems, stabilizing stream banks against cutting which can affect water quality and quantity (USDA – FS 2004 p. 43). The hydrologic functionality of meadow systems may be threatened by the encroachment of conifer species; therefore, the removal of encroaching trees meets the riparian conservation objective direction from the ROD which aims to preserve, restore, or enhance meadow features. Riparian conservation areas proposed for treatment outside of meadows exhibit similar tree species and high stand density conditions to the upland forested stands within proposed treatment units.

Need for Action: The difference between the desired condition outlined in the 2004 SNFPA ROD and the existing condition of meadows, stream, and riparian areas within the West Shore Project area indicates a need to reduce the number of conifers that have established within meadow footprints to support the hydrologic function of meadows and the biodiversity supported by these natural openings within a primarily forested landscape. There is also a need to reduce fuel loading in riparian zones to maintain the integrity of aquatic features in the project area.

Economics

Existing Condition: Communities surrounding the West Shore Project have historically been dependent on forest products, and today retain a strong link to the forest products industry as well as natural resource amenities which attract visitors and residents alike to the West Shore area. A recent workshop to assess community capacity identified the nearby community of Chester as having a high level of human capital, but few workforce opportunities in the area. The communities of Prattville, Lake Almanor West, and Big Meadows were all substantially affected during recent fires. For example, during the Chips Fire (2012), restaurants and other tourism-oriented businesses lost a majority of business during the month of August – a critical time for the tourism economy.

Management Direction: There is a need to support local rural communities by providing a wood supply for local industry and sustaining a portion of the employment base (LRMP p. 4-2, 2004 SNFPA ROD p. 9, USDA FS 2011a). There is also a need to retain industry infrastructure and support the ability of public managers to manage overstocked stands and accomplish ecological objectives within the LNF (2004 SNFPA ROD p. 9). The SLWG is committed to improving local community health and socioeconomic conditions through utilization of biomass, enhancement of forest restoration economies, and improvement of public access to open space.

Need for Action: The declining timber and forest-product economy, with associated impacts community-wide, have highlighted the importance of forest restoration economic outcomes for local rural communities. Furthermore, past impacts to communities from fire, including the indirect effects of lost business due to smoke impacts, highlight a need to reduce the fire threat and improve forest resilience in the West Shore area. Implementation of the West Shore project would introduce new revenue streams and opportunities into the local economy through workforce capacity development, and purchases of goods and services.

Objective 3: To improve recreation experience through facility development, improvements and access management.

Existing Condition: The project area has two developed campgrounds (Almanor North and South) that are aged and do not meet the needs of the current user base. Most campsites are smaller than modern recreational vehicles. The parking spurs and barrier devices need updating. The restroom facilities are outdated and do not meet current user needs or accessibility standards. Adjacent to Almanor North Campground and Lake Almanor is a location suitable to develop a day use area in a location that previously held recreation residences. The Lake Almanor North trailhead of the Lake Almanor Recreational Trail (LART) near State Highway 89 and FS 27N52 is undersized for current use. Dispersed recreation activities dependent on motor vehicle access are currently accessed by short spurs that have been created primarily by the passage of motor vehicles. Many such unauthorized "user-created" routes are not currently part of the National Forest Transportation System (NFTS).

Management Direction: The LRMP (p. 4-4) emphasizes providing a wide range of outdoor recreation opportunities to meet public demand by furnishing different levels of access, service, facilities, and information. The SNFPA ROD (p. 11) reaffirms that providing recreation opportunities is one of the Forest Service's major missions in California, along with providing sustainable and healthy ecosystems. In 2009, the Lassen National Forest Motorized Travel Management (MTM) FEIS identified the need to provide motor vehicle access to dispersed recreation opportunities. A managed road system provides for safe public access and travel, and contributes to economical and efficient management of National Forest Service lands. The LNF LRMP (p. 4-3) gives direction to provide a stable and cost-efficient road system through appropriate construction, re-construction, and/or maintenance. Additionally, water sources are used for project implementation and in support of transportation system use and fire suppression operations. The transportation system and water sources used would be brought up to best management practice (BMP) standards and comply with the LNF MTM ROD (2010).

Need for Action: The state of current transportation system elements, recreational facilities, and water sources demonstrates a need for action to maintain and repair existing system roads, create temporary roads for project implementation, add non-system roads to the transportation system, and decommission system, non-system, and unauthorized routes to address adverse effects to the watershed from unmanaged recreational use. A review of the existing transportation system shows the need to add unauthorized routes to the NFTS as well as decommission other roads to comply with the Lassen National Forest Motorized Travel Management Record of Decision (USDA Forest Service 2010). Without addressing these issues, the continued use of such routes would be illegal and would preclude access by the public to many dispersed recreation activities, including lakeshore recreation.. There is a need to better delineate authorized access routes, add parking, add day use sites, modernize campgrounds, and provide additional bathroom facilities to provide and improve outdoor recreation opportunities for the public.

Proposed Action and Alternatives

This section describes and compares the proposed action and the no action alternative in detail. The US Forest Service made minor changes to the proposed action described herein following the distribution of the West Shore Project proposed action for public scoping in fall 2019. Those changes are denoted by italicized text and identified as either "addition" or "clarification," and are briefly summarized below.

Changes to the proposed action include the addition of 166 acres of pine and mixed conifer forest restoration at the southeastern end of the project on the Plumas National Forest (stands 520, 521, 701-706) based on coordination with Plumas National Forest leadership. This addition provides greater continuity of treatment along the entirety of National Forest Service lands on the west shore of Lake

Almanor. A clarification was made to the treatment for stand 104, switching from underburn only to mixed conifer forest restoration. Windrow spreading was removed from the proposed action following further field review by Forest Service specialists. Clarification of vernal pool and riparian conservation areas boundaries, as well as the addition of a new vernal pool within stand 425, occurred based on field delineations by US Forest Service staff. An addition of 27 acres of underburning on private land adjacent to the initial project boundary was added as a result of collaboration with Collins Pine Company leadership. This addition would enable Forest Service personnel to participate in underburning to natural barriers and/or existing roads, eliminating the need to construct fireline along property lines, and is consistent with state and federal direction to pursue all-lands management.

Alternative 1 - Proposed Action

The proposed action is to utilize ecologically based thinning, post-thinning mechanical surface and ladder fuels treatments, prescribed fire, removal of encroaching conifers, and other similar approaches to address the purpose and need. These activities are proposed across 5,216 acres within the West Shore Project boundary (including 27 acres of private lands). Treatments include a combination of hand and mechanical thinning, piling and burning surface fuels, underburning, and biomass removal of ladder fuels throughout the project area. In addition, the proposed action includes meadow restoration through the removal of encroaching conifer trees within the meadow footprint, and vegetation treatments to reduce fire threat to a CSO and northern goshawk PAC. The proposed action also includes recreation and transportation improvements, including upgrading crossings of the LART where motorized and non-motorized routes intersect, improving signage and access to the LART, upgrading campgrounds to meet the demands of current and future usage, construction of day use parking areas for lake access, improving access and hydrologic function by making road and trail improvements, and permanently decommissioning non-system routes as well as non-essential system routes. Proposed treatments include the integrated design features as described in Appendix C and are described in detail in the following sections. Table 2 summarizes the proposed actions.

Table 2. Proposed Action treatment acres.

Primary Treatment	Summary	Acres*
Pine and Mixed Conifer Forest Restoration	Promote stand resilience, heterogeneity, reduced hazardous ladder fuels, and growth of residual trees. Reduce stand density, create mosaic of individual trees, clumps and openings. Work may include mechanical and hand thinning.	3,379
Plantation	Promote stand resilience, heterogeneity, development of overstory, and reduced hazardous ladder fuels; work will consist of mechanically thinning.	1,291
Meadow	Reduce encroachment of conifers to promote hydrologic function and habitat. Work may include mechanical and hand thinning.	130
CA Spotted Owl and Northern Goshawk Resilience	Reduce ladder fuels, retain canopy cover and heterogeneous stand structure. Work may include mechanical and hand thinning.	315
	Total Forest Vegetation Treatment	**5,115**
Underburn only	Reintroduce fire at low and mixed fire intensities that would occur naturally in mixed conifer and pine forest types found within the project area, along with small patches of high-intensity fire. Underburning will reduce hazardous ladder and surface fuels.	101
	Total Forest Vegetation and Fuels Treatments	**5,216***
Secondary Treatment[1]	Summary	Acres[2]
Post-thin mechanical pile/burn piles	Piling operations would occur where predicted surface fire behavior exceeds desired conditions after primary treatment. Activity-generated and existing surface fuels would be piled using a machine with a grapple style attachment or a dozer fitted with a brush rake.	4,396
Post-thin hand pile / burn piles	In units where mechanized timber activities are precluded, hand thinning and piling of activity-generated and existing fuels may be used to achieve desired conditions.	719
Post-thin mastication	After mechanical treatment, non-merchantable trees that are ladder fuels to larger trees would be masticated. Approximately 10 percent of the shrub cover would not be masticated to retain a component of older shrub species.	4,396
Tertiary Treatment[3]	Summary	Acres
Prescribed underburning	Mimic the low- and mixed-fire intensities that would occur naturally in mixed conifer and pine forest types found within the project, along with small patches of high-intensity fire.	5,216
Transportation	**Summary**	**Miles**
Non-system route change to ML2	Maintenance level 2 roads are maintained for high-clearance (4x4, off-road) vehicles.	1.61

Non-system route change to ML1	For administrative use (ML 1 roads are closed to public motor vehicle use).	0.43
Decommission of	These routes are not needed for the long-term management and	30.23
Decommission NFS routes ML1 and ML2	High clearance and administrative roads that were deemed unnecessary.	1.92
Temporary road construction (new)	New roads to be created for implementation purposes, then decommissioned.	2.00
Recreation	**Summary**	**Number**
New Day-use parking areas	Designation of native soil or gravel-based parking areas along the shoreline to concentrate existing use and reduce environmental degradation.	≤6
Parking areas upgraded	Improve parking at the northern trailhead of the LART and proposed parking area (P4, transportation map) and update signage.	2
Campgrounds upgraded	Reconstruct and upgrade Almanor North and South campgrounds to include utilities, host sites, shower facilities, additional parking, camping spurs, and restrooms	2
Miles of Lake Almanor Recreation Trail (LART) with improved user safety	Upgrade and add hardened crossings of the LART; Install permanent and semi-permanent protection barriers along the LART to protect users.	12
New vault toilets	Along shoreline of Lake Almanor	1

[1]Secondary treatments will occur after primary treatment occurs.
[2]A single acre may receive multiple secondary treatments; therefore, acreage totals do not equal 5,216 acres.
[3]Prescribed fire may occur on up to 5,216 acres within the project area after primary and secondary treatments are complete.

Vegetation Treatments

Pine and Mixed Conifer Forest Restoration

Concepts from the Pacific Southwest Region General Technical Reports, An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests (GTR 220) and Managing Sierra Nevada Forests (GTR 237) would be applied to meet the desired conditions for the project area. Trees would be thinned using a modified thin from below prescription to vary density throughout a treatment unit. Trees would be retained in groups separated by moderately treed or open gap conditions to create a mosaic stand structure. Variable density thinning would encourage horizontal and vertical structural diversity. Treatments for pine and mixed conifer forest restoration would occur on 3,379 acres.

An addition of 166 acres of pine and mixed conifer forest restoration at the southeastern end of the project on the Plumas National Forest (stands 520, 521, 701-706) has occurred since the Proposed Action, Purpose, and Need was publicized based on coordination with Plumas National Forest leadership. This addition provides greater continuity of treatment along the entirety of National Forest Service lands on the west shore of Lake Almanor. A clarification was made to the treatment for stand 104, switching from underburn only to pine and mixed conifer forest restoration.

Prescriptions for thinning in pine and mixed conifer forest stands and in plantations would enhance the health and vigor of stands by reducing density-related stress and insect and disease mortality, particularly in the large tree component, and reduce the risk of high-severity wildfire. Approximately 10% of the project area consists of white fir forest cover, and will be maintained with a higher post-treatment basal area range as noted below (**Error! Reference source not found.**). Trees that are suppressed, of poor health, or appreciably diseased would be removed in favor of healthy trees. A component of healthy understory trees would be retained to promote structural diversity. Healthy, shade-intolerant pine (ponderosa, sugar, and Jeffrey) and Douglas-fir would be retained over shade-tolerant white fir trees. Target stand densities following thinning would range from 35 to 50 percent of maximum SDI so that stand density would remain at or below 60 percent of the maximum SDI for 20 years after thinning to minimize the need for re-entry. Thinning treatments would meet the management standards and guidelines set forth in the 2004 SNFPA ROD p. 50-51.

Mechanical thinning treatments in mature forest habitat (CWHR types 4M, 4D, 5M and 5D) located in the wildland urban interface threat zone would retain at least 40 percent of the existing basal area, an average of 40 percent canopy cover, and meet the management standards and guidelines set forth in the 2004 SNFPA ROD p. 50-51. Average residual basal area by treatment unit would be determined based on forest cover, site quality, and existing stand attributes. Current SDI and basal area and post-treatment basal area by forest cover are displayed in **Error! Reference source not found.**3. Basal area is the cross-sectional area of a tree bole measured at diameter at breast height (dbh) and is used as a measure of density on a per-acre basis (square feet per acre). Basal area can be used to display the changes in a forest stand.

Table 3. Pre- and post-treatment basal area in Pine and Mixed Conifer Restoration treatment units.

Forest Cover	Pre-treatment average Stand Density Index (percentage of maximum)	Pre-treatment basal area range (sq.ft./acre)	Post-treatment basal area range (sq.ft./acre)
Ponderosa pine	93	122 - 224	60 - 100
Mixed conifer	67	140 – 316	80 – 140
White fir	54	140 – 328	120 - 160

In areas proposed for mechanical treatment, ground-based equipment would be utilized on slopes up to 35 percent to harvest trees greater than or equal to 3.0 inches dbh to less than 30 inches dbh. One unit with slopes up to 45 percent will be treated within the WUI threat zone based on field observations showing past logging impacts were light to moderate, a lack of riparian zones in the unit, and limited areal extent with slopes exceeding 35 percent. As stipulated in the integrated design features (#61, Appendix C), a qualified watershed specialist would be present during operations in this unit to ensure soil standards are met. Whole-tree yarding would be used when possible. Follow-up hand treatment would also occur after mechanical treatment to cut non-merchantable trees. Activity-generated landing slash would be machine piled and burned.

Hand treatments would occur in areas such as rocky or steep (>35%) slopes and streamside areas where equipment cannot be used. Hand treatment would focus on removing trees that are ladder fuels to larger trees. Trees generally up to 12 inches dbh, up to less than 30 inches dbh, would be thinned, followed by lopping and scattering or piling and later pile burning.

Within all treatment areas, trees 30 inches dbh and larger and conifer snags 15 inches dbh and larger would be retained within the limits of safety and operability. Any larger trees or snags that are felled for safety and operability would be left on site for wildlife and other resource considerations. Trees 30 inches dbh and larger that are cut for establishment of new parking areas or other recreational improvements would be removed and not left on site.

Plantations (Pine Restoration)

There are approximately 42 plantations proposed for mechanical treatment in the West Shore Project. Some plantations are contiguous, forming a single larger treatment area, such as unit 300. Other plantations are small inclusions within a natural conifer stand, such as unit 39, or form their own stand, such as unit 57. Plantations would be thinned with the same objectives and parameters outlined for Pine and Mixed Conifer Forest Restoration. Treatments in plantations would occur across 1,291 acres. Additionally, small openings, approximately one acre in size, would be created to increase structural diversity within the unit. These openings would regenerate with conifer trees naturally and provide a new age class of trees in the forested stand. **Error! Reference source not found.** shows the existing stand density index, as well as pre- and post-treatment basal area for the plantation treatment units.

Table 4. Pre- and post-treatment basal area in the Plantation (Pine Restoration) treatment units.

Forest Cover	Pre-treatment average Stand Density Index (percentage of maximum)	Pre-treatment basal area average (sq.ft./acre)	Post-treatment basal area range (sq.ft./acre)
Ponderosa pine	81	114 – 180	60 - 100

Facilities and Infrastructure

Vegetation treatments within campgrounds and recreation facilities and along the electrical distribution lines throughout the West Shore Project area would include actions to cut and remove hazard trees as well as thinning to reduce stand densities and improve forest health (See Map 4, Appendix B: Project Maps). Hazard trees would be evaluated and identified using the Hazard Tree Guidelines for Forest Service Facilities and Roads in Pacific Southwest Region (Angwin et al. 2012) to identify live damaged and defective trees for removal. Trees 30 inches dbh and larger and hardwood trees would not be cut unless identified as a hazard tree. Conifer trees 30 inches dbh and larger that are cut would be removed.

Actions specific for the treatment along powerlines include:

- Within 40 feet of the center line of the powerline line, all vegetation would be removed that may pose a hazard to the lines within the next five years from grow-in or fall-in whether identified as a hazard or not.
- Woody shrubs and small trees would be cleared adjacent to power poles and towers.
- Slash and older debris from previous trimming and removal work would be chipped, piled and burned, or removed.
- Within the area 40 to 100 feet from the center line of the powerline, trees would be thinned to a target basal area of 60 to 100 square feet per acre. The lower basal area would be implemented in

the pine dominated stands and the higher basal area in the mixed conifer stands. Trees would be thinned from below, leaving the healthiest, largest trees available.

Along California Highway 89, trees would be cleared to provide a recovery zone for vehicles (Map 4, Appendix B: Project Maps). Within 50 feet of the pavement's edge on both sides of highway, all trees would be cut and removed. Conifer trees 30 inches dbh and larger would not be cut unless identified as a hazard tree using the methodology described by Angwin et al. (2012). Conifer trees 30 inches dbh and larger that are cut would be removed.

Meadow Ecosystems and Riparian Conservation Areas

Meadow ecosystem restoration actions would include removing encroaching conifer trees from within the meadow footprint as determined by a combination of vegetation, soils, topography, and hydrology. Conifers would be removed to restore hydrologic function, with the exception of leaving clumps of trees (10 in. dbh and larger) where anchored by conifers 30 in. dbh or larger. Meadow treatments are proposed across 130 acres, including 114 acres of mechanical thinning and 16 acres of hand thinning.

In mechanical treatment units, low ground pressure or low disturbance machines would be used to remove conifer trees 3 inches dbh to less than 30 inches dbh within the limits of safety and operability. Trees 30 inches dbh and larger that are felled for safety and operability reasons would be left on site for wildlife and other resource considerations. Post treatment, remaining conifer trees less than 12 inches dbh that were unable to be mechanically removed would be hand thinned and piled, or the material would be cut and scattered to a depth less than 18 inches for underburning.

In hand thin meadow units, trees up to 30 inches dbh would be cut. Clumps of trees would be retained as described above. Material less than 10 inches in diameter would be cut and piled or cut and scattered to a depth less than 18 inches for underburning. Thinning would occur in stages as needed to ensure fuel loading is not excessive for underburning.

For all meadow units, hand piles will be placed and burned outside the meadow footprint. Piles would not be placed within 25 feet of the meadow edge. Hand-cut tree boles larger than 10 inches in diameter would be left within the meadow as large down woody debris.

Two aspen stands are located within a vernal pool and associated Riparian Conservation Area (RCA). Vernal pools are seasonal pools of water that provide habitat for distinctive plants and animals. Hand thin treatment would improve aspen stand conditions within the RCA. *Clarification of vernal pool and riparian conservation areas boundaries, as well as the addition of a new vernal pool, within stand 425 occurred based on field delineations since the Proposed Action, Purpose, and Need was publicized.*

Except as specified above, treatments in RCAs would be the same as treatments in the surrounding upland vegetation types, within the parameters of integrated design features (IDFs) designed to protect riparian features (see Appendix C: Integrated Design Features). The IDFs modify treatments to address soil and watershed concerns, such as limiting streamside mechanical treatment, retaining trees for bank stability, etc.

CA Spotted Owl and Northern Goshawk Treatments

Within the CSO and northern goshawk PACs, specific treatment areas would be laid out by the wildlife biologist and fuels specialist based on fuel loading and the risk of losing historical nest trees and key ecosystem characteristics (e.g., > 24 in. dbh trees, and snags and logs > 15 in. dbh). Treatments will be tailored around three habitat delineations: the nest core area – defined by a 500 ft. buffer around the most recently used nests; within the PAC, but outside the nest core area; and the CSO HRCA. Treatments will occur on a total of 315 acres within the CSO and Northern Goshawk PAC and HRCA.

Within nest core areas, treatments will be designed to reduce the likelihood of crown fire ignition and minimize risk to nest trees by promoting low-intensity surface fire through reduction of fuel loading. Activities will consist of hand thinning, piling, and burning of ladder fuels up to 6 in. dbh. Existing surface fuels will also be piled and burned. Underburning may be used as a follow-up treatment.

Treatments in the PAC, but outside the nest core area, will consist of hand thinning ladder fuels up to 10 inches dbh, piling and burning existing surface and ladder fuels, and underburning. Consultation between the wildlife biologist and fuels specialist will guide these treatments with the objective of creating conditions that encourage low-intensity surface fire.

The CSO HRCA would be mechanically treated to increase heterogeneity, guided by similar parameters as the pine and mixed conifer forest restoration treatments. The largest trees would be kept in the mid- and upper-canopy to retain a minimum 40 percent canopy cover average within the HRCA. More large trees, clumps of small trees, coarse woody debris, and shrub cover would be retained in the HRCA treatment compared to the surrounding area and arranged so as to not compromise the overall effectiveness of the landscape fire and fuels strategy. As with the variable density thinning treatment described elsewhere, small openings consistent with the natural range of variation (0.1-0.74 acres; from Safford and Stevens 2017) would be created to increase heterogeneity for foraging owls and other wildlife. These openings would get larger as one moves towards the outer area of the HRCA.

Re-entry of prescribed fire underburning would be needed to reestablish natural fire cycles and maintain desired habitat characteristics every five to ten years as weather conditions and resource availability permit. The Wildlife Biologist and Fuels Specialist would use adaptive management to minimize disturbance to nesting birds and risk to habitat while moving the territory to a more resilient state and closer to the natural range of variation for the Sierra Nevada (i.e., historic ecological conditions in which the CSO evolved and persisted). Ignition methods would encourage low-intensity fire to minimize risks to nest trees. Examples may include: dot firing techniques, allowing fire to back into areas, or allowing fire to back away from nest trees. Key ecosystem components would not be actively lit during prescribed burn operations. Raking may be used to retain these key ecosystem characteristics within the nest core areas.

Fuels Treatments

Pine and mixed conifer restoration treatments would utilize area thinning to decrease canopy closure and increase canopy base height. These treatments would reduce ladder fuels and thin overstory vegetation within the project using a modified thin from below prescription to reduce canopy bulk density. Following mechanical vegetation treatments, fuels would be treated through a combination of mechanical piling and burning, mastication, hand piling and burning, and underburning.

After mechanical treatment, machine piling operations would occur where predicted surface fire behavior exceeds desired conditions (4,396 acres). Generally, down woody surface fuels 3 inches in diameter or less would be less than 5 tons per acre. Surface fuels 3 inches in diameter and larger would be reduced to 10 tons per acre. Surface fuels 12 inches in diameter and larger would be retained over smaller material. Activity-generated and existing surface fuels would be piled using a machine with a grapple style attachment or a dozer fitted with a brush rake. Where appropriate based on surface fuels following initial treatment, fuels may be masticated while retaining 10 percent of shrub cover in order to retain a component of older shrub species. This treatment may occur on up to 4,396 acres.

In units where mechanized timber activities are precluded, hand thinning and piling of activity generated and existing fuels may be used to achieve desired conditions (719 acres).

Throughout the project area, prescribed underburning would be used to reduce surface and ladder fuels, generally following thinning (5,115 acres) except for stands proposed as underburn only (101 acres). It

would also be used to maintain desired conditions after treatments are complete. Prescribed fire would be used to consume forest litter, as well as existing slash and activity-generated slash from vegetation treatments. Prescribed fire would mimic the low- and mixed-fire intensities that would occur naturally in mixed conifer and pine forest types found within the project area, along with small patches of high-intensity fire. Natural fire barriers such as roads and wet drainages would be used as firelines. Where natural barriers do not exist, hand or plow firelines would be constructed by scraping the ground down to mineral soil and constructing waterbars for erosion control.

An additional 27 acres of underburning on private land adjacent to the initial project boundary was added to the project since the Proposed Action, Purpose, and Need was publicized as a result of collaboration with Collins Pine Company leadership. This addition would enable underburning to natural barriers and/or existing roads, eliminating the need to construct fireline along property lines. The inclusion enables LNF staff to participate in cross-boundary burning if desirable, and aligns with state and federal direction to pursue all-lands management.

Recreation Improvements

Recreational opportunities and experiences within the West Shore Project area will be improved through facilities improvement and access management to accommodate the growing recreational use of the West Shore while managing important resources. The LART provides non-motorized recreational opportunity throughout the project area. Proposed improvements include upgrading and adding hardened crossings to the LART where it intersects motorized and non-motorized routes, installing interpretive and wayfinding signage, as well as permanent and semi-permanent protection barriers along the LART where needed to focus users to the designated areas and discourage motorized traffic from using the non-motorized trail. At the Lake Almanor North trailhead of the LART, near State Highway 89 and FS 27N52, additional actions would include removal of vegetation to widen the parking area, installing additional gravel on the parking area surface, updating signage, and improving the deteriorated paved access from State Route 89.

Improvements at Almanor North and South campgrounds would include utilities (water, electrical), host sites, shower facilities, additional parking, improved, paved camping spurs, upgraded restrooms, and removal of seven existing, outdated vault toilet facilities. Vegetation treatments will occur in campgrounds to remove hazard trees, reduce stand density and improve forest health. Campground redesign would result in minimal additional tree disturbance unless trees pose a hazard to users or project crews. Further improvements include the construction of a parking area at the northeast end of the Almanor North campground, as well as the installation of a vault toilet facility near the proposed parking area, north of Plumas County Road 310 (PL 310). Entry and exit would be from PL 310.

Proposed day use improvements include the construction of up to six days use parking areas, all utilizing existing non-system motorized routes. Two day use parking areas (Parking Area 1 and 2) would be constructed adjacent to Lake Almanor, between Prattville and the 5 Mile Trail Crossing. Two day use parking areas (Parking Area 3 and 4) would be constructed adjacent to Lake Almanor between the 5 Mile Trail Crossing and Dyer View Day Use. A day use parking area (Parking Area 5) would be constructed adjacent to Lake Almanor, between Dyer View Day Use and Rocky Point, with access from PL 310 utilizing non-system motorized routes.

A non-system route in the Rocky Point area would be improved and brought onto the National Forest System (NFS). A day use parking area (Parking Area 6) would be constructed adjacent to Lake Almanor at the newly incorporated route in the Rocky Point area. Day use parking areas would have approximately a 5 to 20-vehicle capacity, depending on location and the current extent of vehicle use.

All day use parking areas would have wayfinding signage and supporting infrastructure for parking areas, and would be constructed with either native surface or gravel. Routes would be brought up to Forest Service standards and constructed using BMPs. Locations of proposed parking areas are identified on Map 3 (Appendix B: Project Maps).

Less than ¾ miles of pedestrian trails would be added to the system to provide beach access from proposed parking areas.

Transportation

To ensure the project could be implemented as proposed, changes would need to be made to the existing road system. Maps 2 and 3 outline the proposed changes to the transportation system (Appendix B: Project Maps). These would include:

1. Approximately 1.61 miles of existing non-system routes would be added to the NFS and would be left open after the project completion at maintenance level 2 (ML2).
2. Approximately 0.43 miles of existing non-system routes would be added to the NFS as ML1 roads to facilitate future management activities and would be closed to the public.
3. Approximately 30.23 miles of non-system routes would be decommissioned. Unauthorized routes would be used as temporary roads as needed for thinning operations before being decommissioned.
4. Approximately 0.50 miles of NFS ML2 roads would be decommissioned permanently.
5. Approximately 1.42 miles of NFS ML1 roads would be decommissioned permanently.
6. Approximately 2.00 miles of temporary roads would be constructed for the project and then decommissioned.

Table 5. Proposed actions by transportation system category and total length.

Action	Miles
Non-system route change to ML2 (high clearance vehicle)	1.61
Non-system route change to ML1(administratively use)	0.43
Decommission of non-system routes	30.23
Decommission NFS routes ML2	0.50
Decommission NFS routes ML1	1.42
Temporary road construction (new)	2.00

Map 3 shows the 32.3 miles of non-system routes that have been identified. Except where noted, mapped non-system routes as well as any existing unmapped non-system routes would be decommissioned within the project area. Approximately 2 miles of non-system routes, within the project area, would be added to the Lassen National Forest base map. These segments would be brought up to Forest Service standards and rerouted as necessary. Six designated parking areas between State Route 89 and the Lake Almanor shoreline would be added to the transportation system for public access to Lake Almanor, as described above in the Recreation subsection.

The project would also decommission system routes that are no longer viable (Map 2, Appendix B: Project Maps). A segment of road 27N85 is currently inaccessible due to two stream crossings that have failed. This portion of the road would be decommissioned and removed from the system. Work would include decommissioning the road and the two crossings that are currently impassable, as well as a portion of the road adjacent to the crossings. Additionally, the stream crossing on the 27N03 near the 27N03B intersection would be brought up to Forest Service standards. Routes FS 27N52B and FS 27N52B1 near the LART and Lake Almanor West community are not used by FS personnel and cause user issues with the adjacent non-motorized LART; therefore, these routes would be decommissioned. A

motorized route to the Almanor Recreation Leach Field from State Highway 89 would be added to the NFS as an ML 1 road. All added routes would be brought up to Forest Service standards.

Alternative 2 - No Action

Under the no action alternative, the current Lassen Forest Plan would continue to guide management within the project area. None of the activities proposed under Alternative 1 would be implemented. Recent fire events show that continued fire exclusion and a lack of vegetation management will perpetuate risk to the public and fire management personnel. Current conditions of many seasonally dry forests in the Western United States, especially those that once experienced low- to moderate-intensity fire regimes, leave them susceptible to high-severity wildfire today. Although no treatment activities would be implemented to accomplish project objectives, other activities in the project area such as road maintenance, firewood cutting, hunting, and OHV riding would continue. The no action alternative would not preclude activities that have already been approved or that may be planned as separate projects.

Alternatives Considered but Eliminated from Detailed Study

The following alternatives were considered as a result of comments received during scoping, but were eliminated from detailed study:

- **Use 20 inches as the upper diameter limit for vegetation treatments, rather than 30 inches, and leave intermediate sized trees for immediate wildlife needs, and to become the next generation of large trees.** This alternative was considered but eliminated from detailed study because restoration treatments designed as part of the West Shore Project seek to create greater horizontal heterogeneity in the forest stand structure by retaining groups of trees separated by moderately treed or open gap conditions to create a mosaic stand structure. Trees greater than 20 inches but less than 30 inches diameter at breast height would be removed as needed to adequately reduce stand density, create open gap conditions, and reduce canopy fuels. An alternative using 20 inches as the upper diameter limit would not effectively meet the projects purpose and need. Proposed treatment is both consistent with the conceptual approach for managing Sierran forests offered by the General Technical Report PSW-GTR-220 and applicable agency direction, including the Sierra Nevada Forest Plan Amendment.
- **Maintain a minimum canopy cover of 50% in the California spotted owl (CSO) home range core area (HRCA).** Retaining 50 percent canopy cover would reduce the effectiveness of this project in meeting the purpose and need for fuels and silviculture. While the HRCA is currently partly bordered by areas of private timberland that have been logged since the 2012 Chips Fire, history has shown this condition is temporary. Ingrowth of brush and trees will occur and present a hazard to the communities the West Shore Project is attempting to protect. The Storrie and Chips Fires demonstrate the potential for fire to become established in the steep lower elevations of the Feather River Canyon and move into the West Shore Project area. Decreasing the canopy closure to an average of 40% will help to decrease the risk of crown fire occurrence as fire moves from the southwest into the project area. The CSO HRCA is entirely within the WUI threat zone. The Sierra Nevada Forest Plan Amendment ROD provides that, for areas outside the WUI defense zone and within CSO HRCAs, exceptions (to the designing projects to maintain an average of 50% canopy cover) are permitted "in limited situations where additional trees must be removed to adequately reduce ladder fuels, provide sufficient spacing for equipment operations, or minimize re-entry. Where 50 percent canopy cover retention cannot be met for reasons described above, retain at least 40 percent canopy cover averaged within the treatment unit."

Comparison of Alternatives

No treatments would occur under Alternative 2, however some fuelwood cutting and hazard tree removal would occur as part of routine road and recreation maintenance.

Environmental Impacts

This section summarizes the potential environmental impacts of the alternatives considered in detail in relation to whether there may be significant environmental effects as described in 40 CFR 1508.27. The impacts summarized in this Environmental Assessment are taken from the following documents which are hereby incorporated by reference into this EA. The following full reports or memoranda are part of the project record on file at the Lassen National Forest.

- Air Quality Report, West Shore Community Wildfire Protection Project: J. Erickson. April 5, 2020.
- Aquatics Biological Evaluation/Biological Assessment and Specialist Report, West Shore Community Wildfire Protection Project: R. Sanders. March 30, 2020.
- Biological Evaluation for R5 Frost Service Sensitive Plant Species, West Shore Community Wildfire Protection Project: A. Sanger, March 13, 2020
- Biological Assessment for Threatened and Endangered Plants, West Shore Community Wildfire Protection Project: A. Sanger. March 16, 2020.
- Cultural Resource Report, West Shore Community Wildfire Protection Project: D. Hrivnak. May 2020.
- Terrestrial Wildlife Biological Evaluation, West Shore Community Wildfire Protection Project: R. Sanders and G. W. Watts III. June 4, 2020.
- Terrestrial Wildlife Biological Assessment, West Shore Community Wildfire Protection Project: G. W. Watts III. April 28, 2020.
- Project Management Indicator Species Report, West Shore Community Wildfire Protection Project: R. Sanders and G. W. Watts III. June 9, 2020.
- Migratory Landbird Conservation on the Lassen National Forest, West Shore Community Wildfire Protection Project: R. Sanders and G. W. Watts III. June 9, 2020.
- Fire and Fuels Report, West Shore Community Wildfire Protection Project: R. Arechiga and J. Erickson. April 2020.
- Watershed Specialist Report, West Shore Community Wildfire Protection Project. N. Abramson and D. Immeker. April 2020.
- Recreation Specialist Report, West Shore Community Wildfire Protection Project: S. Castleton. May 2020.
- Silviculture Report, West Shore Community Wildfire Protection Project: R. Arechiga, J. Nickerson, and C. Danheiser. June 2020.
- Transportation Report, West Shore Community Wildfire Protection Project: T. Orange. February 26, 2020.

Air Quality

Proposed Action

Direct and Indirect Effects

Short-term production of smoke and associated emissions would occur during prescribed burning operations in the project area. However, daily coordination among local fire management officials, adherence to the Forest Service Burn Plan and Smoke Management Plan (SMP), and the daily determination of smoke transport conditions by California Air Resource Board (CARB) would help to ensure that the smoke and related emissions for the proposed prescribed fire activities would stay within the standards of the Clean Air Act. The direct effects to air quality would be minimal and mitigated by following the guidance of the SMP and CARB.

Treatment of fuels under the proposed action would result in decreased smoke production and associated emissions in the event of a wildland fire. This decrease in emissions would help to reduce smoke related impacts to nearby communities. Short-term impacts from smoke and associated particulate matter from the proposed prescribed fire treatments, combined with emissions from other vegetation burning on public and private land will occur. However, as discussed earlier, these impacts would be mitigated by adherence to the SMP and CARB. In addition to these safeguards, a daily Air Quality Conference Call is conducted during the prescribed fire season. They are attended by representatives of the air quality management districts, , CARB, Geographical Area Coordination Center meteorologists and agencies that are conducting prescribed fire operations. These calls help ensure that burning only occurs when atmospheric conditions are conducive to good smoke dispersion and that the cumulative effects of all prescribed burning remain at levels that are within the provisions of the Clean Air Act.

Fugitive dust could result from logging operations such as skidding and hauling during dry seasons. It would be mitigated by standard contract requirements for road watering or other dust abatement techniques.

Cumulative Effects

The cumulative effects analysis for Air Quality considers ongoing, proposed and reasonably foreseeable future actions. Impacts to air quality from prescribed underburning and machine and hand pile burning in the project and adjacent areas during the last five years have been minimal and no Notice of Violation of air quality standards has been issued on the Lassen National Forest during this period. The proposed action would increase the amount of prescribed fire activities in the area above what has been implemented for the last five years and would have the potential to impact the air quality of the area, when combined with ongoing and reasonably foreseeable future actions, beyond what has occurred during this time.

Implementing the proposed action would reduce fuels in these stands and allow fire to be more effectively managed under both suppression and prescribed fire scenarios. This would provide an environment where fire could be used more readily to maintain and restore ecosystems within the West Shore project area, as well as increase opportunities for managers to take suppression measures when needed, thereby reducing duration and smoke production for wildfires. Increased use of fire would continue to reduce and maintain fuel loads at a level where emissions during burn conditions would be moderated.

Additionally, implementing prescribed fire as proposed would allow fire managers to ignite units on days with optimal smoke dispersion, as opposed to wildfires which are unplanned events that can have adverse smoke impacts on communities for extended periods of time.

No Action

Direct and Indirect Effects

The West Shore project would not be implemented under the no action alternative and therefore there would be no direct effects. The absence of thinning treatments, pile burning, and prescribed fire would allow for continued increases in the surface, ladder and canopy fuel loading throughout the project area. Down woody material would continue to accumulate at a rate that is greater than decomposition, contributing to the surface fuel layer. The absence of thinning and prescribed fire would allow continued in-growth of ladder fuels. As the canopies of stands become denser, and the surface and ladder fuel loads increase, anticipated fire behavior and effects would become more severe. These factors would cause an increase in the probability of a fire escaping initial attack, thus creating an unplanned emissions event that could be prolonged and may occur under adverse atmospheric conditions.

Cumulative Effects

Without treatment, the risk of a major air quality impact from a large wildland fire burning in the area would be increased under the no action alternative. The amount of smoke created, in the event of a large wildland fire burning in the project area, would be increased for several reasons. There would be more acres burned in a shorter period of time, and the fire would burn under hotter and drier conditions, so the amount of fuel consumed would increase and fuels would burn that would otherwise have been removed under the proposed action. Increased consumption of canopy fuels, due to more intense fire behavior, would also contribute to increased smoke production.

Additionally, smoke impacts to local communities would be more severe in the event of a wildland fire due to the normal summertime inversions. Inversions cause smoke to linger near the surface in low-lying areas and can last for extended periods, especially during summertime conditions. Summertime inversions have impacted the vicinity of the West Shore project during years when large wildland fires burned, including during the 2012 Chips Fire, the 2008 Cub Complex, 2007 Moonlight Fire, and the 2000 Storrie Fire.

In discussing the cumulative effects, it must be considered that the West Shore Project is within a fire adapted ecosystem; and, potential emissions from future wildfires would be for the no treatment scenario in comparison to the treatment scenario. While smoke emissions will occur as a result of prescribed pile and understory burning in the project area, it would be considerably less and shorter in duration than emissions from a wildfire that escapes initial attack. These incremental emissions from treatments in the near term will reduce the pulse of emissions released in a very short period of time during a wildfire, especially under 97th percentile fire weather conditions[4]. When atmospheric conditions are hot (temperature), windy (wind speed) and consistently dry (low relative humidity), it has a corresponding effect on live and dead vegetation (fuels). The effect that 97th percentile fire weather has on live and dead vegetation (fuels) results in a resistance to control in the event of wildfire. This resistance to control can lead to a greater number of acres burned and a corresponding increase in emissions per acre with more fuels available for combustion per acre compared to prescribed burn conditions. Resistance to control also increases the likelihood of longer duration fire events with associated smoke production.

[4] 97th percentile weather conditions are extreme fire-weather conditions and are based on analysis of long-term fire-season weather data from local National Weather Service-approved weather stations. These conditions are used to predict weather indices for the worst-case scenario fire weather days using variables of wind, temperature, relative humidity, and fuel moisture.

Botany

Proposed Action

Direct and Indirect Effects

Forest Service Region 5 Sensitive Plant Species:

Direct effects are possible to the one small occurrence of *Botrychium minganense* located within a small spring that flows out of the Big Springs private inholding. This site is found within a unit that is proposed for mechanical thinning, pile burning and underburning; however, IDFs specify that ground-disturbing activities would be excluded within 50 feet of plants, and that no ignitions would occur within the occurrence. Direct effects would only be anticipated should fire back into the occurrence, although most species of *Botrychium* have been found to be tolerant of the low severity fire anticipated under prescribed underburning conditions in RCAs (Clines 2009).

Although adequate botanical surveys have been performed in the project area, it is possible that isolated individuals of *Botrychium minganense* or other Sensitive *Botrychium* species may have been missed, since *Botrychium* species may persist below-ground in some years without sending up a tropophore (Clines 2009). However, with the implementation of integrated design features, mechanical equipment is excluded within 50 feet of perennial stream channels, reducing the risk that potential habitat would be impacted by mechanical equipment. In addition, while the above ground parts of *Botrychium* species could be killed by fire during fuels treatments activities, these species have been found over the long-term to tolerate the low to moderate intensity fires (Johnson-Groh and Farrar 1996) that would be most likely to occur within RCAs. As a result, any direct impacts to undiscovered occurrences of *Botrychium* species would likely be short-term in nature.

Direct effects may also occur to individuals of *Cypripedium fasciculatum* with the implementation of the proposed action. The one known occurrence of *Cypripedium fasciculatum* is found within a hand-thin, pile burn and underburn unit; however, integrated design features state that while hand-thinning is allowed, no piles will be placed within 25 feet of plants, underburning will not be allowed, and trees will be felled away from the occurrence. As a result, while there is the potential for plants to be directly impacted by the removal of trees directly within the occurrence, these impacts are expected to be minor.

The proposed action could also affect potential habitat for this species within the project area. On the Lassen and Plumas National Forests, this species is nearly always associated within intermittent drainages containing dogwood species (Brown 2008, USDA FS 2020a). IDFss specify that ground disturbing activities (with the exception of hand thinning) would be excluded and trees would be directionally felled away from occurrences of *C. fasciculatum* and from patches of dogwood. In addition, no piles would be placed within 25 feet of dogwood patches within RCAs and drainages. By protecting potential habitat for this species, impacts from the proposed action would be minimal to undetected occurrences and potential habitat.

While there are no known occurrences of *Astragalus pulsiferae* var. *suksdorfii*, there may be suitable habitat for this species within eastside pine stands within the project area. With the use of ground-based equipment there is a risk of intensive soil compaction damaging plants and inhibiting the development of new individuals. However, this species is often found in old landings, skid trails, and system roads, which illustrates the ability of this species to withstand a moderate amount of disturbance, and its preference for open habitats with little competition (USDA FS 2020a). It is also possible that prescribed burns may impact any overlooked plants, however, any such fire would likely be of low intensity, due to minimal surface fuels where plants of *Astragalus pulsiferae* var. *suksdorfii* tend to occur. As a result, direct effects

of prescribed fire activities on plants of this species would be minor, as plants may resprout from subsurface root crowns after low intensity burns (Clines 2009).

Indirect effects are separated from an action in either time or space.

Project-related changes to tree species composition may include the removal of incense cedar trees during thinning activities from perennial wet areas that may contain potential habitat for *Botrychium* spp. within the project area. Because incense cedar trees are presumed to establish connections with mycorrhizal fungi which may also support *Botrychium* species (D. R. Farrar, personal communication, September 28, 2010), this activity may affect potential habitat for *Botrychium* species. Indirect effects to *Botrychium minganense* or potential habitat for this and other *Botrychium* species could also occur if the hydrology of associated springs and riparian features were to be altered by project activities. However, with the incorporation of IDFs for RCAs that would exclude mechanical equipment from within 50 feet of stream channels, and the retention of incense cedar within 150 ft. of known *Botrychium* occurrences, this effect would not be anticipated to occur to known occurrences with the implementation of the proposed action.

The potential change in canopy cover could also have indirect effects to *Cypripedium fasciculatum* within the project area. In California, Clustered Lady's-slipper (*Cypripedium fasciculatum*) is most commonly associated with mixed conifer forests in the mid-to-late stages of successional development. Clustered Lady's-slipper orchids lack physiological adaptations to regulate and tolerate drought and heat stress; therefore, they depend on species, such as dogwoods, to limit the amount of direct solar radiation that reaches the forest floor (Brown 2008). As a result, removing small diameter confer species will most likely have a minor effect on this species as long as the overstory of large diameter trees and dogwoods is maintained.

The proposed action would also result in changes to vegetation structure in *Astragalus pulsiferae* var. *suksdorfii* habitat. The post-treatment canopy cover would be considerably decreased within the project area allowing more light to reach the understory promoting herbaceous diversity and abundance. In addition, vegetation management activities under the proposed action are expected to decrease flame lengths and lower the risk of crown fires. As a result, this potential decreased risk of high intensity fire and decrease in canopy covers would constitute a beneficial effect to *Astragalus pulsiferae* var. *suksdorfii* habitat by decreasing the future risk of plants being damaged or killed by high intensity fire and by opening up eastside pine habitats within the project area.

An additional potential indirect effect to all sensitive plant species would be an increase in invasive plant species or other undesirable non-native species as a result of project activities. None of the known invasive species occurrences currently threaten known or potential habitat for any Sensitive plant species in the project area. However, in the long-term, thinning and burning treatments implemented as part of proposed action would create open microsite and sometimes macrosite habitats of reduced shade and soil cover, making conditions for invasive plant species establishment more favorable. Since these species are often more aggressive than the natives, they can quickly dominate a site. Overall, the Invasive Plant Species Risk Assessment completed for this project determined that there is a moderate risk of potential weed spread with the implementation of the proposed action (West Shore Project Record).

The proposed action would have no effect on the R5 sensitive plant species *Lewisia kelloggii* ssp. *hutchisonii* because known occurrences and potential habitat for this species do not occur within proposed treatment units.

Federally Threatened Plant Species: Direct effects to individuals of *Orcuttia tenuis* can occur within the West Shore Project when plants are crushed, disturbed, or are impacted by thinning or fuels reduction activities.

With the implementation of the Proposed Action, including integrated design features, there will be no direct effect to individuals of *Orcuttia tenuis* from any project activities. No mechanical treatments are planned in the vicinity of vernal pools, andburning around *Orcuttia*-occupied vernal pools would be limited to the spring, when seasonally present surface water would protect any *Orcuttia* plants from potential impacts, or firelines will be constructed to protect plants from any direct impacts from fire.

Direct effects to vernal pool habitat and associated critical habitat can occur in the form of soil compaction as a result of heavy equipment or vehicles working in these areas, especially when soils are wet. While mechanical equipment will not be used within or adjacent to the pools, hand thinning of conifers will occur in these areas; however within vernal pools themselves hand thinning activities are not allowed and all trees will be directionally felled away from these areas so that no impacts will occur during hand thinning activities. In addition, integrated design features require all piling and associated pile burning will only occur outside of the mechanical exclusion zone buffers. As a result, there will be no direct effects to either vernal pool habitat or critical habitat with the implementation of the Proposed Action for the West Shore Project.

Indirect effects are most likely to occur from an increase in sedimentation or invasive plant species as a result of thinning and fuels treatments as well as prescribed fire activities near the vernal pools.

Sedimentation may increase if erosion accelerates following the treatment of vegetation on the ground and the disturbance of soil crusts from project activities. Such heavy deposition is unlikely; however, since the slopes around the pools are gentle or flat, with little potential to shed soil into the pools. In addition, mechanical treatment and firelines cannot occur within mechanical exclusion zones around occupied or potential vernal pool habitat for *Orcuttia tenuis*, further reducing the potential for sediment to enter the pools due to project activities. As a result, sedimentation is not expected to enter these pools during project activities.

Indirect effects from an increase in invasive plant species or other undesirable nonnative species in the pools as a result of project activities could also be detrimental to *Orcuttia tenuis* and its associated vernal pools. A variety of invasive species are known to the project area; however, many are associated with exposed roadside of Highway 89 or on the shore of Lake Almanor and do not pose a threat to vernal pool habitats within the project area. In addition, integrated design features ensure that all off-road equipment be weed-free prior to entering the Forest, and that any new occurrences found prior to project implementation will be manually controlled or avoided prior to project activities, further reducing indirect effects from potential noxious weed introduction. Overall, the Invasive Plant Species Risk Assessment for the West Shore Project determined that there is a moderate potential for weed spread with the implementation of the Proposed Action (West Shore Project Record).

Cumulative Effects

Forest Service Sensitive: Cumulative effects would result when the direct and/or indirect effects on a given species add incrementally to the effects of past, ongoing, and reasonably foreseeable future actions. Current inventories of Sensitive plant species capture the aggregate impact of past human actions and natural events that have led to the current inventory of these species within the project area (CEQ 2005). Ongoing actions have similar effects to these species as the West Shore Project, since all projects have either been surveyed to similar standards or would be prior to project implementation. Ongoing projects with the potential for the highest impact to Sensitive plant species include vegetation management activities, public recreational use, as well as road and trail maintenance activities within the project area. Other actions, such as fuelwood and Christmas tree cutting, and recreation facility maintenance, may be

contributing only incidental effects on these species, if any (West Shore Past or Reasonably Forseeable Future Actions (PORFFA), West Shore Project Record). Ongoing and future actions on adjacent private lands may also add cumulatively to those affects from the implementation of the proposed action, but since survey requirements and mitigations are not known on these lands, the type and extent of impacts to these species or their potential habitat cannot be quantified.

Future projects would incorporate similar design features to flag and avoid known occurrences of Sensitive plant species unless the project is intended to restore or enhance the species or its habitat or potential impacts are believed minor. As with ongoing actions, future actions such as proposed timber harvest, machine piling, and prescribed fire activities within the West Shore Project area (West Shore PORFFA, West Shore Project Record) would be surveyed to similar standards to ensure that any impacts to Sensitive plant species are either beneficial or mitigated so that the long-term viability of each Sensitive plant species on the forest is maintained.

The proposed action would treat approximately 5,216 acres through a variety of methods across the landscape. While the proposed action may have some direct and indirect effects to *Cypripedium fasciculatum* and *Botrychium* spp, occurrences and potential habitat, any impacts would be minimal considering project integrated design features will protect known and potential habitat for these species from most project related impacts. Although project effects would add cumulatively to the effects of past, ongoing and future actions on *Astragalus pulsiferae* var. *suksdorfii*, *Botrychium* spp. and *Cypripedium fasciculatum* these effects would not lead to a loss of viability for these species within the West Shore Project area or across the Lassen NF for at least the next 20 years.

Federally Threatened: Since there would be no direct or indirect effects to *Orcuttia tenuis*, its vernal pool habitat or associated critical habitat, cumulative effects are not a concern.

No Action

Direct and Indirect Effects

Forest Service Sensitive: There would be no direct effects to known occurrences or potential habitat for *Astragalus pulsiferae* var. *suksdorfii, Botrychium ascendens, Botrychium crenulatum, Botrychium minganense, Botrychium montanum, Botrychium pinnatum, Cypripedium fasciculatum,* or *Lewisia kelloggii* ssp. *hutchisonii* other than those associated with ongoing activities.

Indirect effects of the no action alternative would be those associated with post-fire habitat succession, the future risk of high severity wildfire, and the future risk of invasive weed species establishment and spread. No indirect effects would be anticipated for *Lewisia kelloggii* ssp. *hutchisonii* because occurrences and habitat are located outside of areas proposed for treatment, and this species has been shown to be very resilient to high intensity wildfire in the past (USDA FS 2020a). In addition, continued trends of increasing tree density and canopy cover within potential habitat would not be likely to affect *Botrychium* species, since these species are mycorrhizal and can be found under a wide range of canopy cover conditions (Laeger 2002). There would also no effect to *Cypripedium fasciculatum* plants or habitat because of future habitat success as this species is normally found in mid-to late serial stands with high canopy cover; however, a recent post-fire study on the Plumas NF has shown that this species is extremely sensitive to fires even at a low-intensity, and that known occurrences that burned at high intensity were most likely extirpated (Belsher-Howe 2019).

High severity fire effects could potentially cause negative effects to *Botrychium* sp., as well as potential habitat. Although *Botrychium* species appear able to survive a low to moderate severity fire that does not kill mycorrhizal soil fungi, a high intensity fire could heat the soil enough to kill *Botrychium* plants and/or mycorrhizal fungi (Johnson-Groh and Farrar 1996). Hydrological changes and increased erosion that

decrease habitat quality for *Botrychium* spp. could also follow a high intensity fire, due to the loss of stabilizing vegetation and duff. In addition, a higher risk of high severity fire increases the risk of impacts from fire suppression activities, which can involve higher levels of ground disturbance than the fire itself. This increased risk of high severity fire differs from the proposed action, where proposed fuels treatments would reduce the risk of high severity fire occurring in the vicinity of *Botrychium* occurrences and potential habitat.

The no action alternative may have minor negative impacts to *Astragalus pulsiferae* var. *suksdorfii*, due to habitat succession, but these should be insignificant since this species tends to grow in loose sandy soil areas devoid of trees and are therefore not likely to be affected by encroaching conifers in the short-term. In addition, the majority of *Astragalus pulsiferae* var. *suksdorfii* habitat is not likely to burn during a wildfire event, due to low vegetative cover and any plant burned may resprout from subsurface root crowns.

The threat of invasive species invasion would not differ with the implementation of the no action alternative, because priority occurrences of invasive plants within the project area would be treated regardless of the alternative chosen, the potential effects of invasive plants would not differ from those described under the proposed action.

Federally Threatened: Implementation of the no action alternative of the West Shore Project would have no direct or indirect effects on individual *Orcuttia tenuis* plants, the vernal pools they inhabit, or the critical habitats surrounding them. These pools receive their water primarily from snowmelt, so vegetation management activities in the uplands adjacent to the pools is unlikely to have any effects one way or the other to *Orcuttia tenuis* or to the vernal pools in which it grows.

Cumulative Effects

Forest Service Sensitive: The scope of analysis and the effects of past, ongoing and future foreseeable actions under the no action alternative would be identical to those discussed for proposed action. The implementation of the no action alternative would not result in direct effects to any of the Sensitive plant species analyzed within this document. Past, ongoing and foreseeable future actions would therefore add cumulatively only to the indirect effects of the no action alternative as described above. These include the potential negative indirect effects to *Botrychium* sp. and *Cypripedium fasciculatum* from the potential of a high-intensity wildfire.

Overall, the implementation of the no action alternative is not expected to affect the viability of *Astragalus pulsiferae* var. *suksdorfii*, *Botrychium ascendens*, *Botrychium crenulatum*, *Botrychium minganense*, *Botrychium montanum*, *Botrychium pinnatum* or *Lewisia kelloggii* ssp. *hutchisonii* within the West Shore Project area or across the Lassen NF for at least the next 20 years; however, in the event of a high intensity wildfire, the one known occurrence of *Cypripedium fasciculatum* could be extirpated within the project area, but the overall viability across the forest would be maintained.

Federally Threatened: Since there would be no direct or indirect effects to *Orcuttia tenuis*, its vernal pool habitat or associated critical habitat, cumulative effects are not a concern.

Cultural Resources

See the West Shore Project Cultural Resources Specialist Report for more details.

Proposed Action

Direct and Indirect Effects

Direct and indirect effects for the proposed action will be mitigated and reduced to a No Adverse Effect through the use of integrated design features that are Approved Standard Protection Measures pursuant to the Regional Programmatic Agreement (RPA). The District Archaeologist, in conjunction with the Heritage Program Manager, fuels, vegetation management, or fire specialists as necessary, shall develop treatment measures for cultural resources designed to eliminate or reduce potential adverse effects to the extent practicable by utilizing methods that minimize surface disturbance, and/or by planning project activities in previously disturbed areas or areas lacking cultural features.

Sites that are determined to need protection may receive any of the appropriate protection measures identified as integrated design features for the West Shore Project based on the sensitivity, location, and nature of the site (See Appendix C: Integrated Design Features).

Cumulative Effects

By implementation of the RPA Approved Standard Protection Measures, the proposed action would have No Adverse Effect to known historic properties under NHPA and have no adverse indirect, direct effects, or cumulative effects.

No Action

Direct, Indirect, and Cumulative Effects

No direct effects to cultural resources would result from no action. Indirect effects include the increased risk of potential wildland fire and damage to fragile cultural resources due to increased fuel loading. With no action, there would be no cumulative effect to cultural resources.

Fire and Fuels

Proposed Action

Direct and Indirect Effects

The proposed action would change the stand structure within the project area, increasing diversity by creating areas of lower stand densities, reduced surface and ladder fuel loading, and reduced crown fuels. The diversity in forest structure created by these proposed treatments and their spatial arrangement in conjunction with other treatments across the landscape may greatly reduce the growth of large fires (Graham et al. 2004).

In some instances, proposed treatments have the potential to moderately increase flame lengths as a result of microclimate changes within some stands. A more open canopy structure would result in increased light and solar radiation that could lead to surface fuels drying out earlier in the year. Thinning treatments will also lead to windier conditions within stands as a result of reduced stand density. However, the increase of the canopy base height from the proposed action would offset the increase of flame length, resulting in an overall reduction in the likelihood of surface fire transitioning into the crowns. The proposed action would reduce the likelihood of fire moving to neighboring crowns in the event of a torching tree by decreasing canopy closure and disrupting canopy fuel continuity.

The 20004 SNFPA ROD p. 34 direct the USFS to actively restore fire-adapted ecosystems by making demonstrated progress in moving acres out of unnaturally dense conditions (Condition Class 2 or 3) to a condition where they would be expected to experience fire frequency and effects within the historical

range of variation, with low risk of losing key ecosystem components (Condition 1).The proposed action would result in measurable progress towards meeting these goals by implementing 5,216 acres of prescribed underburning. Proposed thinning treatments throughout the area would enable effective implementation of prescribed fire with desired effects of reducing surface fuels while leaving the canopy largely intact. Implementing thinning and burning operations would move acres toward Condition class 1. The proposed action will also contribute to the diversity of the West Shore Project if the area experiences a fire event under 97th percentile conditions by encouraging a mixed-severity fire regime. Smaller patches of high severity burn would enhance the heterogeneity of the vegetation in this landscape and contribute to future heterogeneity when they invariably burn again.

While the effects of the proposed action do not meet all of the desired conditions as described in the measurement indicators for fuels and fire as described in the West Shore Project Fire and Fuels Report they do meet the purpose and need of the West Shore project by reducing fire behavior by decreasing canopy, ladder and surface fuels within the project area. Modeled fire behavior would decrease under 97th percentile fire weather conditions, with 89% of the area expected to experience surface fire and flame lengths decreased to 7 feet. Though this is higher than the desired condition (4 feet) under 97th percentile conditions, direct attack fire suppression tactics can be used when flame lengths are less than 8 feet, using equipment such as fire engines and dozers according to the Haul Chart (Rothermel, 1992), an industry standard in wildland firefighting. This decrease in fire behavior after implementation of the proposed action would provide a safer environment for firefighters and improve the likelihood of successfully defending the communities in the project area. The change in fire type in most units to surface or passive crown under 97th percentile conditions also meets the goals from the 2004 SNFPA ROD p. 34-35 of modifying canopy fuels to reduce the potential for spread of crown fire; and removing sufficient surface and ladder fuels in treatment areas to reduce wildland fire intensity, thereby contributing to more effective fire suppression and firefighter safety

Further direction from the 2004 SNFPA ROD p. 34 states that managers shall strategically place fuel treatments across landscapes to interrupt potential fire spread. Historically, the local large fire threat has come from the Feather River Canyon to the southwest. The proposed action would help to disrupt fire spread coming from the Feather River Canyon before it reaches the communities in the West Shore Project area by implementing 5,216 acres of various fuels treatment throughout the project area.

Cumulative Effects

The proposed treatments in the West Shore Project area would increase the ability of fire suppression personnel to both safely and effectively limit the size and severity of wildland fires. Firefighter safety would be improved with the reduction of the roadside dead and dying trees, as they pose one of the greatest hazards to firefighters. Suppression efficacy would be improved within the treatment areas by creating an environment where wildfires would burn at lower intensities and where firefighting line production rates would be increased because less ground fuels and small diameter trees would need to be cleared for fire line construction and backfiring operations. The combination of these effects improves the defensibility of the communities within the project area.

Additionally, reducing the canopy, surface and ladder fuels within the West Shore Project will enable these stands to be more resilient in the event of a wildfire occurrence under extreme conditions. The diversity in forest structure created by these proposed treatments and their spatial arrangement across the landscape may also greatly reduce the growth of large fires (Graham et al. 2004).

No Action

Direct and Indirect Effects

The no action alternative would leave the project area in its current state and it would continue on its trajectory of accumulation of fuels. In the absence of thinning treatments, wildfire would have a greater potential of burning with uncharacteristic severity over more of the landscape. Resilience of the stands to the effects of fire within the project area would continue to degrade, as surface fuel accumulations continue to increase, along with continued ingrowth of fire intolerant species, such as white fir. These conditions would further contribute to an increasing likelihood of the project area sustaining historically uncharacteristic fire severities from future wildfires. Modeled fire behavior shows that under the no action alternative only 39% of the treatment units experience surface fire under 97th percentile conditions. Since the no action alternative would not reduce fuel conditions and therefore not alter fire behavior, it would not improve the effectiveness of fire suppression nor firefighter safety as managers are directed to do in the 2004 SNFPA ROD p. 34-35 through modification of canopy fuels and removal of surface and ladder fuels. The no action alternative would also not contribute to a landscape level strategy to interrupt spread of large fires that historically come from the Feather River Canyon to the southwest.

Cumulative Effects

The project area would continue on its trajectory of accumulating surface fuels and ingrowth of ladder fuels. Canopy closure would continue to increase and canopy base height would decrease, leaving the project area increasingly susceptible to crown fire and its effects. These effects would be compounded by the continued suppression of fire, allowing greater fuel accumulation, and subsequently increasing the difficulty of fire suppression.

Under these conditions, wildfires would likely increase in size and intensity, behave more erratically, and be harder to control. Increased intensity will leave stands in this area vulnerable to the effects of historically uncharacteristic fire behavior, high levels of mortality, and potential for type conversation to brush fields. These conditions will be exacerbated over time by higher temperatures and extreme weather events associated with climate change.

Hydrology

The West Shore Project area contains 15.2 miles of seasonal streams and no perennial streams. These small headwater tributaries typically only contain flow in the spring and early summer months. The porous nature of the soils and fractured volcanic bedrock contribute to the lack of perennial flows in the area. The potential for impacts to the hydrologic features in the project area is low. In addition to the scarcity of surface water, the area also has a low gradient and an abundance of coarse, well-drained soils. These characteristics promote rapid infiltration of surface water and runoff across the project area.

No waterbodies in the project area are listed as impaired under the Clean Water Act. Beneficial uses, as described in the Central Valley Regional Water Quality Control Board Basin Plan, do exist and are detailed in the West Shore Community Wildfire Protection Project Watershed Specialist Report.

All subwatersheds within the project area were affected at moderate-high severity by the 2012 Chips Fire. Additionally, much of the project area has been logged in the past 30 years using a variety of even and uneven-aged silvicultural prescriptions, primarily by ground-based equipment. Lingering effects of soil erosion following both wildfire and logging on National Forest System (NFS) lands within the project area were not observed within the course of the field work for the hydrology assessment.

An extensive NFS road network exists throughout the project area that is heavily utilized by the general public. Both system and non-system roads were observed to locally impact channel function in several locations throughout the project area.

Proposed Action

Direct and Indirect Effects

As part of the proposed action, road infrastructure near streams and stream crossings would be improved or decommissioned to minimize sediment inputs to stream channels. Several non-system routes located within Riparian Conservation Areas (RCA) will be decommissioned, helping prevent further channel incision and sedimentation around these affected locations.

The physiography of the project area makes the potential for negative effects to hydrologic resources low. The only anticipated effect would be a short-term flush of water post-implementation. Given the low gradient, a short-term flush of water related to the proposed action would not cause more than trivial sediment transport. On coarse soils, treatments could cause localized soil displacement, but with so little slope they would be unlikely to be transported into channels in sufficient quantities to cause adverse sedimentation or other water quality concerns.

The wetlands and meadows within the project area are all seasonal in nature. By reducing conifer encroachment along the edges of these meadows, the proposed treatments will make more water available to these systems and in return, make them more resilient to future dry periods and less susceptible to damage from high-intensity wildfire.

Cumulative Effects

Past, ongoing, and reasonably foreseeable future ground-disturbing activities on both public and private lands (PORFFA, see project record) were analyzed using the Equivalent Roaded Area (ERA) method for both the Proposed Action (Alternative 1) and the no action Alternative (Alternative 2).The cumulative watershed effects (CWE) analysis area for hydrology expands beyond the West Shore Project boundaries to encompass the Lower West Shore Lake Almanor (LWSLA), Upper West Shore Lake Almanor (UWSLA), and Upper Fanani (UF) subwatersheds. Associated with this, thresholds of concern (TOC) were setfor each watershed according to standards outlined in the Lassen National Forest Land and Resource Management Plan (1992). The risk of CWEs only becomes high if the modeled ERA approaches the TOC.

Implementation of the proposed action will be consistent with integrated design features that establish spatial and temporal limits on treatment activity. As a result, modeled ERA values will remain below the TOC for all subwatersheds affected by the proposed action. To reduce the risk of CWEs associated with the proposed action, follow-up pile burning and mechanical fuels treatments would be delayed one year after mechanical vegetation treatments. This modeling did not take into account the water resource related benefits of approximately 32 miles of planned road decommissioning and improvements that will occur under Alternative 1. Further information, including modeled numbers and assumptions, can be found in the West Shore Community Wildfire Protection Project Watershed Specialist Report.

No Action

Direct and Indirect Effects

There are no direct effects of choosing the no action alternative. No management related land disturbance would occur so there would be no additional sources of sediment to stream channels within the project area. Changes to vegetation cover or soil compaction would not be altered from their current trends; therefore there would be no direct effects to stream flow timing or intensity. An indirect effect of not carrying out the proposed action includes forests in the project area trending toward increased stand densities and conifer encroachment. Continued conifer encroachment would potentially decrease water

content in the soil, resulting in lowered water tables and decreased herbaceous plant diversity and productivity. Another indirect effect would be the continuance of increased fuel load within the project area. Since no fuel treatments would be implemented, the increased fuel load would lead to higher potential for wildfire with negative hydrologic consequences, including potential to remove groundcover, adversely affect soils, remove shading from streams, and increase sediment loads in streams.

Cumulative Effects

Taken in aggregate, past, ongoing, and reasonably foreseeable future activities in the project area have produced few adverse cumulative watershed effects. If no action is taken, increased forest density and conifer encroachmnent, as well as increasing risk of high-severity wildfire will continue to subwatersheds in the project area will continue to trend towards unhealthy states

Recreation

Proposed Action

Direct, Indirect, and Cumulative Effects

The proposed action maintains long-term accessibility of the lakeshore for recreation activities, provides for improved public health and safety by reconstructing and upgrading toilets, camp spurs, roads, and responds to current demands by RV users for improved camping areas and associated facilities. The proposed action addresses sustainability concerns by removing access to an extensive network of non-system trails. Although the proposed action would create short-term inconveniences, closures, and visual quality changes, it meets goals outlined in the LRMP and Prattville Management Area Recreation Masterplan by improving access and creating designated day-use areas, as well as upgrading aged campground facilities and trailheads. If the proposed action were to be implemented, the recreation measure of including effective natural and manmade barrier devices around recreation areas would be critical to prevent the creation of post-treatment non-system routes. Proposed forest health activities and recreation improvements would increase resiliency and function within the project area. Cumulative impacts could include the amplification of short-term inconveniences to users, when project activities are added to ongoing and routine recreation maintenance activities. In the long term, project implementation activities would maintain the recreation settings valued by the public.

No Action

Direct, Indirect, and Cumulative Effects

By not addressing the current state of fuel loading and network of non-system routes, increased risk of stand-replacing wildfire may eventually impact opportunities for recreation. Under the no-action alternative, the character and setting of the West Shore Project area would continue to be impacted by the trend of high tree mortality, the continuation of user-made trails, and overcrowding. The aesthetics, safety, and recreational opportunities in the project area would continue to be affected by these trends.

Silviculture

Proposed Action

Direct and Indirect Effects

The proposed action incorporates vegetation treatments, including pine and mixed conifer restoration, plantations, meadow ecosystems and riparian conservation areas, and CA spotted owl and northern

goshawk resilience within the project area. Mechanical thinning is proposed within defense and threat zones, plantations, and meadows. Hand thinning is proposed in rocky areas, on steep slopes, and in sensitive areas, including some meadow units and portions of the CA spotted owl and northern goshawk resilience treatments. Prescriptions for each treatment type are designed to be consistent with the goals and strategies for fuels and vegetation management established in the Lassen National Forest LRMP. A detailed map of treatments by stand is available in Appendix B: Project Maps.

The proposed action would meet the primary purpose of the proposed action by reducing the risk of wildfire by increasing canopy base heights, thinning overstocked stands, and reducing fuel loading. Thinning prescriptions would enhance the health and vigor of stands using concepts from the Pacific Southwest Region General Technical Reports, An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests (GTR 220) and Managing Sierra Nevada Forests (GTR 237). Thinning would focus on increasing heterogeneity, promoting variable density, retaining of unique wildlife habitat features, and creating multi-aged diameter distribution and species variability. Retention of naturally grouped trees and enhancement of natural openings would establish a mosaic within the stand structure both horizontally and vertically.

Reduced tree competition would improve vigor of remaining trees, contributing to insect and disease resistance. Radial release around large legacy pine trees and variable density thinning around existing healthy pine trees would increase vigor and reduce proximity of ladder fuels. Thinning would raise the percentage of trees in mid to late-seral age classes by approximately 24 percent when compared to the existing condition. In general, the change of distribution within both the mid and late -seral stages of development will increase the heterogeneity of the stand and the range of size classes. Thinning will accelerate growth of residual trees, leading to increased resilience of the stands which would be composed of a higher proportion of more fire resistant, larger diameter trees and species.

In meadows and riparian areas, thinning will reduce stand densities and decrease canopy cover that can shade out shade-intolerant tree species, understory vegetation and riparian hardwoods such as aspen, cottonwoods, and willows.

Thinning treatments would reduce stand density index (SDI) below 60% of maximium SDI, enabling improved conifer growth and resilience to distrubance. The proposed action maintains stands at lower SDI, reduces crown closure and allows resources necessary for growth to become more available. Treatments will also reduce the risk of bark beetle-induced mortaility.

Within the defense zone of the WUI, proposed treatments would reduce stand conditions from greater than 50% of maximum SDI to between 24% and 30% of maximum SDI post-harvest within the defense zone across all cover types.

By creating more open stand conditions and reducing ladder fuels, thinning treatments in Alternative 1 will reduce potential for severe wildfire, promote growth among residual large-diameter, fire-resistant trees, and improve resilience to future insect and disease outbreaks. Variable density thinning will also create new openings and retain denser clumps, both contributing to heterogeneity on the landscape.

Cumulative Effects

The area considered for silviculture cumulative effects is the project area. Activities and management since 1999 were considered in this analysis. Management activities and events prior to this are considered in this analysis in so far as they have shaped current stand structure conditions. Current and post thinning stand composition, structure, and density are discussed within the PORFFA and include changes from past actions described in the list of cumulative actions. Natural disturbances such as wildfire, insect and disease epidemic in conjunction with past and ongoing land management have shaped the present conditions of the West Shore Project area. Previous timber sales within the West Shore project area have

been a combination defensible fuels profile zones, group selections, individual tree selection, sanitation, or salvage harvest that removed large trees that were at risk of mortality, fire impacted or infected with disease such as heterobasidion root disease. The proposed action and silvicultural prescriptions were developed in response to the existing condition.

No Action

Direct and Indirect Effects

Forest areas within the West Shore project would remain unnaturally dense for an indefinite period or until loss from wildfire or other disturbance were to occur. Competition between small-diameter understory trees will inhibit crown growth and slow overall stand diameter growth, resulting in suppressed, small-diameter trees even as they progress in age. Without a major disturbance event such as a wildfire, drought induced widespread tree mortality, or insect or disease infection, forest stands would continue to increase in density. Shade-intolerant pine and aspen tree species would be at the highest risk of mortality and decrease species diversity. Understory shrub, forb and grass vegetation cover would continue to decrease because of low light environments under closed tree canopies (Jones et al. 2015). Mortality of understory trees due to competition, insects, or disease, as well as selective bark beetle mortality of large diameter trees, would continue. This increased mortality, particularly of understory trees, would increase hazardous fuel loading and the chance of extensive loss due to a stand replacing wildfire event. Remnant, large diameter legacy pine trees would be at an increased risk of mortality due to lack of resources and increase potential of crown fires. Open canopied stands with seedling, sapling and pole size trees could continue to grow. Though, over time as stand densities exceed 60 percent of maximum SDI they too would also become susceptible to the conditions described above.

Cumulative Effects

The No Action alternative would result in a reduction of the overall vegetation diversity, while increasing fuel loading as suppressed trees die from competition for resources, disease, and density related mortality. Public and firefighter safety would continue to be jeopardized from the existing conditions in the event of a wildfire.

Forested areas if left untreated, would experience a moderate increase in tree size and canopy closure, and would also be affected by pulses of mortality as a result of disease and bark beetle related epidemics. As trees die, they will continue to contribute to surface fuel loading. Crown closure would increase the potential for crown fires and stagnate growth as available growing space becomes limited.

The forest structure and diversity within riparian habitat conservation areas and riparian conservation areas would follow the same trajectory as the adjacent stands. Shade-intolerant pine, aspen, and understory vegetation would remain at risk of loss because of competition from encroaching conifers, primarily white fir, and little regeneration of shade-intolerant vegetation is likely to develop over the next twenty years.

Current management practices and ongoing activities such as forest management, timber sales, service contracts, and fire reduction projects, road and trail maintenance, recreation, would remain unchanged from existing conditions in the short term until other signed decisions come forth. The loss of timber sales, service contracts, or stewardship contracts would be implemented to help support the local community or provide tax monies to the county.

Soils

Soils in the West Shore Project treatment areas formed from basalt, andesite, and metamorphic rocks or their alluvium and colluvium. Two soil types, Skalan and Holland families of soils make up 99% of the project area proposed for mechanical treatment. These soils have sandy loam to loam textures with varying percentage of rock fragments, are well-drained, deep to moderately-deep upland soils. They are typical for this area and do not present any unusual problems for management. Within the Skalan and Holland map units are small inclusions of Aquolls, which are the low-lying soils found in wet meadows and riparian areas, with silt loam to clayey textures and a seasonal water table from one to six feet.

The units planned for mechanical thinning are gently sloping with 94% of the treatment area less than 20% slope and an average slope of 7.8% overall. The risk of damage to soils is reduced on these low-gradient slopes due to lower erosion hazard and less tendency for equipment tracks and wheels to dig in to the soil surface causing rutting and displacement.

Management indicators for soil quality include soil cover (for erosion prevention), porosity loss, soil organic matter, litter and duff, and large woody material. No soil resource issues were identified during scoping.

Proposed Action

Direct and Indirect Effects

Within mechanically thinned areas, units as a whole are expected to retain greater than 50 percent soil cover, well-distributed throughout. Though skid trails would have reduced levels of soil cover compared to the surrounding areas, erosion-prevention measures on skid trails are incorporated in the proposed action. The extent of porosity loss (soil compaction) on landings and skid trails would be minimized by the judicious re-use of existing skid trials and landings, and by adhering to soil moisture standards. Post-project soil monitoring and possible remediation is specified in the project integrated design features. Except for portions of landings and the first few hundred feet of main skid trails, a measurable loss of soil organic matter would not be expected. Where losses occur, they are anticipated to be within the defined LRMP soil standard in terms of areal extent, and litter and duff will continue to exceed the LRMP standard of 50 percent areal extent. The West Shore Project area is variably stocked with large woody material, with low levels in the plantations due to their relatively young age. An integrated design feature for the project stipulates that, where they exist, a minimum of five logs per acre will be left in place. Based on past projects with similar treatment on similar soils, with integrated design features (IDFs) in place, it is expected that these standards will be met

The proposed action includes mechanical tree removal and piling in 11 small meadows ranging in size from 1 to 17 acres. Meadow soils have a higher risk of rutting and compaction due to finer soil textures, low rock content, slow drainage rates, and high water tables. In meadows, compaction not only can cause reduced water infiltration rates and root penetration, but can also impact subsurface hydrology. Due to the increased risk of undesired impacts to meadow soils, specific IDFs have been developed for this project and are listed in the integrated design features section (Appendix C: Integrated Design Features).

The direct effect of underburning would be an immediate reduction in cover, possibly below the standard. However, this would be short-lived and cover would be reestablished in one or two years. Needlecast immediately after the burn would provide some cover. Throughout the areas where conifers are removed, grasses, forbs, and low-growing shrubs would have access to more resources (light, water, and nutrients) enabling them to grow and spread, providing additional live soil cover. Underburning would not impact soil porosity since it does not involve using heavy equipment. Prescribed fires are designed to leave some residual duff to protect the mineral soil and maintain high infiltration rates, which minimizes potential for

erosion, though there would be a net loss in litter and duff. This temporary loss of litter and duff would be restored over a short time period, 2 to 3 years, with new needlecast. After conifer removal in the meadow areas, grasses and forbs would replace pine litter as the dominant soil cover.

Piling of fuels will be done by excavator-mounted grapple, tractors fitted with brush rakes, or by hand. Hand piling has little potential for detrimental soil effects so only machine piling effects are considered here. Excavator-mounted grapples create minimal soil disturbance because the machines have low ground pressure and they lift material from the soil surface. However, the risk of a loss of soil organic matter can be high with tractor piling because there is a potential to move soil into burn piles when using brush rakes. But since the fuels objective is to avoid having soil in burn piles so the pile material can burn, the risk is reduced. The proposed action is to favor leaving logs greater than 12-inch diameter.

Recent research has shown that pile burning in the Sierra Nevada can have limited detrimental effects on soils (Busse et al. 2014). This is due to both the limited area of soil surface covered in piles and the fact that high soil heating is concentrated near the center of the pile. Piles consisting of small or mixed fuel sizes generally will not produce adverse soil heating effects. However where fuels are predominately large diameter wood greater than 25 cm (10 inches) temperatures in the center of the pile will be hot enough to consume the soil organic matter in the upper few inches. Burn piles in one recent study in Sierra Nevada thinning units occupied about 8% of the soil surface, limiting the area of soil that covered by burn piles and reducing the potential detrimental effect to acceptable levels (Busse et al. 2014).

Within the West Shore project a number of plantations were windrowed during site preparation for planting back in the 1960s. Windrows are a legacy disturbance wherein topsoil was bladed into long piles together with the root crowns of shrubs, prior to tree planting. The practice was largely effective in reducing shrub competition with newly planted trees, but it is now known that windrowing is detrimental to soils and long-term productivity. The LNF seeks to restore soils in these windrowed plantations when feasible and for this reason windrow spreading was a part of the proposed action in the scoping document for the West Shore project. However the project soil scientist visited all of the windrowed plantations in the project and found them unsuitable for spreading because they had been flattened out during a previous entry except for a few scattered remnants. For this reason windrow spreading was removed from the proposed action.

The Land and Resource Management Plan for LNF directs the Forest to avoid putting mechanical equipment on slopes over 35%. One unit in the West Shore project, Unit 12, which is within the WUI threat zone is desirable to treat on pitches up to 45% slope. Field observations showed that past logging impacts were light to moderate, no riparian zones are present in the unit, and the area of slope over 35% is limited in extent. It was decided to mechanically harvest this unit up to 45% slope with the stipulation that a qualified watershed specialist be present to ensure soil standards are met.

The proposed action includes decommissioning of 32.15 miles of non-system routes, restoring about 39 acres to productive soils.

Cumulative Effects

Legacy effects within the West Shore Project were found to be low to moderate in intensity. The greatest legacy impacts exist where soils were windrowed in plantations, causing soil organic matter deficits between the windrows. Subsequent entry into the plantations partially redistributed the windrows. Complete restoration of soil organic matter in the plantations will take place over the long term through natural processes.

Ten years of soil monitoring as part of the Herger-Feinstein Quincy Library Group pilot project, which included the Lassen National Forest, has shown that forest thinning operations like those proposed in the

West Shore Project, using modern equipment and methods, have a good track record of meeting soil quality standards (HFQLG 2011).

Potential impacts of the proposed action on the short-term and long-term soil resource are minimal due to the mitigations (IDFs) that are part of the proposed action. When considered with past and foreseeable activities within the proposed project area, the project has little potential to create impacts of a degree and extent considered detrimental or adverse to the soil resource.

No Action

Direct, Indirect, and Cumulative Effects

No direct adverse effects on soils would be expected with the no action alternative but indirect effects could result from continued accumulation of fuels and the increasing risk of high intensity wildfire. High intensity wildfires adversely impact soil resources through combustion of ground cover which leaves extensive areas of bare soil and increases the risk of soil loss by erosion. Combustion of the litter and duff layer, which is the forest's nutrient reservoir, leads to reduced long-term productivity. High intensity wildfires can also adversely impact the soil's hydrologic function by creating a hydrophobic layer, and by reducing soil organic matter and stable aggregates, all of which can lead to lower water infiltration rates, increased erosion risk, and reduced soil water storage.

Transportation

Proposed Action

Direct and Indirect Effects

For the short-term during project implementation, depending on the length and timing of the project, there would be potential of erosion from the construction and reconstructions of NFS roads. There would be standard provisions in the contracts to require erosion control measures in case seasonal closures are needed.

In the short-term, there would be a direct effect of increasing traffic due to the movement of equipment, materials and personnel into and out of the project area. Increased traffic can impact the safety of the public and employees using the roads in the area. Traffic management and control measures would minimize these impacts. With the use of standard contract provisions for traffic control, effects would be negligible.

A well-managed and maintained road system provides for safe and efficient public access and firefighter safety. The road maintenance activities proposed would improve both public access and firefighter safety. There is a risk of remnants of temporary roads used for this project being left open and to receive continued motorized vehicle use once the project is complete. Standard contract provisions will address the issue and ensure the roads are decommissioned.

Adding the UZ04, Lake Almanor West community fire access road, would authorize high clearance vehicle use by the public and a fire ingress/egress route to state highway 89. The route is existing and in use therefore the indirect impact would be minimal. Nearby along the Lake Almanor West southern boundary line and FS property, many of the property owners have utilized unauthorized roads, trails, and parking areas on FS land as driveways, parking areas, and trails from/to the rear of their property. The unauthorized routes would be decommissioned and may have an indirect effect on property owners as access to the rear of their property would be affected and/or may be blocked on FS property.

With the decommissioning of UMN958, the community of Big Meadows would not have direct access to the FS road system. Vice versa, users on the FS road system would not have access to the Big Meadows community. The main entrance of the Big Meadows community has deeded access to state highway 89 over FS land. The deed has been interpreted to include any roadway width necessary to serve the Big Meadows community.

Upgrading existing unauthorized routes to native/aggregate maintenance level 2 roads and parking areas along the West Shore of Lake Almanor near Prattville as shown on the project transportation and recreation map would provide alternative parking. The parking would help offset the effects of decommissioned unauthorized routes and parking areas causing erosion near the shoreline. The new access routes and parking areas would enhance efficiency, proper maintenance, and provide an area for vehicle parking once unauthorized routes along the shoreline are decommissioned.

Cumulative Effects

All past actions have led to the existing transportation system which include county roads, NFS roads, non-system roads on National Forest land, and roads located on private land which are owned and operated by timber management companies. The proposed transportation actions, road maintenance, and road related watershed improvements would create a more efficient road system providing the necessary access for project implementation, future management, fire suppression, and improved public access. Active management of the official transportation system will minimize adverse environmental effects and reduce future maintenance costs.

The Lake Almanor West fire access road has the potential to become 1 of 2 main access points to the Lake Almanor West community. A low maintenance level for most of the road and management for low speeds will keep maintenance costs down, continue existing levels of use, and provide low vehicular speeds. Low vehicular speeds would continue to enhance pedestrian safety near the Lake Almanor recreation trailhead.

No Action

Direct, Indirect, and Cumulative Effects

Under this alternative, no treatments would be performed and the existing road system within the project area would remain as is. There will be no direct or cumulative effects. Supplemental funds generated by the project would not occur to help the currently under-funded forest road maintenance program. Roads would continue to deteriorate through use by high clearance vehicles, off-highway vehicles (OHV), etc. without concurrent maintenance and upkeep. Non-system roads would remain physically open and would continue to cause resource damage through erosion and improper drainage.

Wildlife

For more details, see the terrestrial wildlife biological evaluation, management indicator species report, and the neotropical migratory bird report for the West Shore Community Wildfire Protection Project.

Proposed Action

The proposed action is consistent with the following direction for terrestrial wildlife:

Federal Laws

- Bald and Golden Eagle Act of 1940, as amended
- Departmental Regulation 9500-4
- Code of Federal Regulations (23, 36, 50 CFR)

- Endangered Species Act (ESA 1976)
- Forest Service Manual and Handbooks (FSM/H 1200, 1500, 1700, 2600)
- National Environmental Policy Act (NEPA 1969)
- National Forest Management Act (NFMA 1976)
- The Migratory Bird Treaty Act of 1918, as amended
- USFWS Official Species List

Forest Service direction for TES species incorporated in the BE for this project can be found in the Forest Service Manual (FSM 2670.31, FSM 2670.32). Information regarding threatened, endangered, proposed, candidate and sensitive species is also obtained through the cooperation of the USFWS and the California Department of Fish and Wildlife (CDFW).

Consultation with USFWS

A list of T&E species was provided by USFWS, "List of Threatened and Endangered species that may occur in your proposed project location, and/or may be affected by your proposed project," issued January 9, 2020, accessed via USFWS web page (https://ecos.fws.gov/ipac/), (Sacramento Office – Consultation Code: 08ESMF00-2020-SLI-0735, Event Code: 08ESMF00-2020-E-02320).

Forest Management Direction

- Lassen National Forest Land and Resource Management Plan (LNF LRMP, USDA 1992)
- Plumas National Forest Land and Resource Management Plan (PNF LRMP, USDA 1988)
- Regional Forester (Region 5) policy and management direction
- Regional Forester (Region 5) Sensitive Plant and Animal Species List (June 10, 1998), as amended July 3, 2013
- Sierra Nevada Forest Plan Amendment (SNFPA) and its implementing Final Environmental Impact Statement (FEIS), Record of Decision (ROD), January 2001
- Sierra Nevada Forest Plan Amendment (SNFPA) and its implementing Final Supplemental Environmental Impact Statement (FSEIS), Record of Decision (ROD), January 2004
- Sierra Nevada Forests Management Indicator Species Amendment FEIS, December 2007, Plumas Forest Plan

Federally Threatened or Endangered Species

Based on the analysis conducted in this BA, it was determined that implementation of the West Shore project May Affect, but Is Not Likely to Adversely Affect individuals of the Federally Endangered Gray Wolf. In addition to gray wolf, other terrestrial federally listed or proposed species typically addressed on the Lassen National Forest are North American wolverine (*Gulo gulo luscus*), northern spotted owl (*Strix occidentalis caurina*) and the valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). The project area is outside the range of or lacks suitable habitat for these species, so they will not be further addressed in this document. On May 15, 2020, the Southern Sierra Nevada Distinct Population Segment (DPS) of Pacific fisher (*Pekanai pennanti*) was listed as endangered under a new rule from the U.S. Fish and Wildlife Service, but the Northern California-Southern Oregon DPS, the population of fisher that includes those found in the West Shore Project area, was not listed under the Endangered Species Act due to a stable population and access to a large range of suitable habitat (USDI 2020). The

Pacific fisher is addressed as a sensitive species in the project's Biological Evaluation of Forest Service Sensitive Species. The USFWS regional wildlife lead determined that there is not a need to conference on fisher for the Lassen NF at this time.

Additional information on these species and why they are or are not analyzed further are to be found in the 2020 Wildlife West Shore Project BE, located in the project record at the Almanor Ranger District.

The duration of effects on the wildlife resource is described generally according to the following terms and definitions unless otherwise noted:

- **Immediate** – Approximately one growing season of several months or less
- **Short-term** – 0 to 5 years
- **Mid-term** – 5 to 20 years
- **Long-term** – 20+ years

Table 6. Threatened, Endangered, Proposed, Candidate and Sensitive Animal Species that potentially occur in the West Shore Project.

Threatened, Endangered, Proposed, Candidate, and Sensitive Species (Scientific Name)	Species Status*	Habitat or Ecosystem Component	Category for Project Analysis**	Determinations ***
				Proposed Action
Invertebrates				
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	USFWS : FT	Elderberry in the Central Valley of CA	1	WNA
Shasta hesperian snail (*Vespericola shasta*)	USFS : S	Moist bottom lands	1	WNA
Western Bumblebee (*Bombus occidentalis*)	USFS : S	Access to flowering plants and abandoned rodent burrows	3	MAI
Reptiles				
Western pond turtle (*Emys marmorata*)	USFS : S	Riverine and Lacustrine	1	WNA
Birds				
Bald eagle (*Haliaeetus leucocephalus*)	USFS : S USFWS : BCC	Large trees adjacent to riverine and lacustrine	3	MAI
California spotted owl (*Strix occidentalis occidentalis*)	USFS : S, MIS USFWS : BCC	Late seral closed canopy coniferous forest	3	MAI
Greater sandhill crane (*Grus canadensis tabida*)	USFS : S	Prefers open habitats (grasslands and croplands) with shallow lakes and fresh emergent wetlands	2	WNA

Threatened, Endangered, Proposed, Candidate, and Sensitive Species (Scientific Name)	Species Status*	Habitat or Ecosystem Component	Category for Project Analysis**	Determinations ***
				Proposed Action
Great gray owl (*Strix nebulosa*)	USFS : S	Late seral closed canopy coniferous forest adjacent to wet meadows	2	WNA
Northern goshawk (*Accipiter gentilis*)	USFS : S	Late seral closed canopy coniferous forest	3	MAI
Willow flycatcher (*Empidonax trailii brewsteri*)	USFS : S USFWS : BCC	Riparian with dense willows, upland thickets, and bushes	1	WNA
Yellow rail *(Coturnicops noveboracensis)*	USFS : S	Marshy habitat	1	WNA
Mammals				
Gray wolf (*Canus Lupus)*	USFWS : FE	Habitat generalist	1	MAINLA
Pacific marten (*Martes caurina*)	USFS : S	High elevation late seral closed canopy coniferous forest	1	WNA
Sierra Nevada red fox *(Vulpes vulpes necator)*	USFS : S	Mainly mountain meadows and woodlands near treeline. Some winter use of high elevation coniferous forest	1	WNA
California wolverine (*Gulo gulo luteus*)	USFWS : FP USFS : S	Remote, high elevation, tree-line habitat and areas of deep snowpack	1	WNA
Pacific fisher (*Pekania pennanti*)	USFS : S	Late seral closed canopy coniferous forest	3	MAI
Pallid bat (*Antrozous pallidus*)	USFS : S	Most common in open, dry habitats with rocky areas (rocky outcrops, cliffs and crevices)	3	MAI
Townsend's big-eared bat (*Corynorhinus townsendii*)	USFS : S	Mesic habitats	3	MAI
Fringe-tailed myotis (*Myotis thysanodes*)	USFS : S	Hardwood-conifer open canopy forests	3	MAI

***Species Status: USFWS: FE** = Federal Endangered, **FT** = Federal Threatened, **FP** = Federal Proposed, **FC** = Federal Candidate, **BCC** = U. S. Fish and Wildlife Service Birds of Conservation Concern, **SOI** = Species of Interest.
USFS : S = U.S. Forest Service - Sensitive, **USFS : MIS** = U.S. Forest Service – Management Indicator Species
CDFW: SE = State Endangered, **ST** = State Threatened, **FP** = State Fully Protected, **SSC** = State Species of Special Concern,
****Category 1:** Species whose habitat is not in or adjacent to the Project Area and would not be affected by the project. **Category 2:** Species whose habitat is in or adjacent to the Project Area, but would not be either directly or indirectly affected by the project. **Category 3:** Species whose habitat would be either directly or indirectly affected by the project.
*****Determinations:**
USFWS T & E Species: WNA = Will Not Affect, **MAINLA** = May Affect but Is Not Likely to Adversely Affect Individuals or their designated critical habitat, **MAILAA** = May Affect and Is Likely to Adversely Affect Individuals or their designated critical habitat. **Proposed (P) Species: WNA** = Will Not Affect, **MAINLJCE =** May Affect but is Not Likely to Jeopardize the Continued Existence of Individuals, **MAILJCE** = May Affect but is Likely to Jeopardize the Continued Existence of Individuals **Proposed Critical Habitat: WNA** = Will Not Affect, **NLRDAM** = Not Likely to Result in the Destruction or Adverse Modification of their Proposed Critical Habitat, **LRDAM** = Likely to Result in the Destruction or Adverse Modification of their Proposed Critical Habitat

FS Sensitive Species: WNA = Will Not Affect, **MAI** = May Affect Individuals, but is not likely to result in a trend toward Federal listing or loss of viability, **MAILRTFL** = May Affect Individuals, and is Likely to Result in a Trend toward Federal Listing or loss of viability.

Sensitive Species

Due to the project area being outside the range of the species, or due to the lack of suitable habitat or habitat components in the project area, or because of project design, the proposed action would have no effect on the following Forest Service Sensitive species: Shasta Hesperian snail, western pond turtle, greater sandhill crane, great gray owl, willow flycatcher, yellow rail, Pacific marten, Sierra Nevada red fox.

Sensitive species analyzed in detail for the West Shore project were western bumble bee (*Bombus occidentalis*), northern bald eagle (*Haliaeetus leucocephalus*), California spotted owl (*Strix occidentalis occidentalis*), Northern goshawk (*Accipiter gentilis*), Pacific fisher (*Pekania pennanti*), Pallid bat (*Antrozous pallidus*), Townsend's Big-eared bat (*Corynorhinus townsendii*), and Fringed Myotis (*Myotis thysanodes*). A summary of effects from the proposed action and the no action alternative for each of these species is included below.

Northern bald eagle

The following analysis evaluates effects to habitat at two spatial scales; project area (6,311 acres), and home ranges (1,629 acres).

Proposed Action

Direct and Indirect Effects

Project Area

Proposed thinning treatments could result in the potential loss of future nest and roost trees near Lake Almanor's shore. Given the number of large green trees throughout the West Shore project area, the capacity for bald eagles to source trees for nesting and roosting should not be substantially impacted. Also, the maximum diameter limit for trees selected for felling is 30 inches, so preferred nesting trees should not be affected; eagles prefer to nest in trees 41 to 46 inches dbh (Lehman 1980). Retaining these large trees results in minimized risk to preferred nesting sites. Effects of treatments to the remaining green trees within the analysis area would result in the reduction of some present risks and improved resilience. A more open forest would decrease water stress, increase availability of soil nutrients to individual trees, and increase resiliency in remaining trees to insects, disease, and wildfire. Reduction in canopy closure would provide a more open forest structure for eagles, which would result in an increase in preferred forest structure for nesting and cultivation of forest structure that allows for easy flight (Andrew and Mosher 1982). With less constrained resources in a more open forest, remaining trees would have the capacity to become large trees in a shorter amount of time, increasing the suitability for bald eagle nesting preferences in treated forest stands.

Since many studies have shown that eagles avoid or are adversely affected by human disturbance (Stalmaster and Newman 1978, Andrew and Mosher 1982, Fraser 1985, Fraser et al. 1985, Knight and Skagen 1987, Buehler et al. 1991, Grubb and King 1991, Grubb et al. 1992, Chandler et al. 1995) and that response to disturbance is most sensitive during nest building, courtship, egg laying, and incubation (Detrich 1990), treatments would have the potential to affect nesting bald eagles through noise disturbance from equipment and from worker noise and presence in the area. To mitigate effects during nesting season, an LOP would be in place for active nests within the Switchback and the Rocky Point

territories within 0.4 miles of nest trees during breeding season (January 31 through August 31). The LOP is in place to mitigate disturbance effects from forest management activities to both adult bald eagles and eaglets. Vegetation management treatments are planned to reduce hazardous fuel loads and the risk of high intensity wildfire. This fuel reduction would have an effect on small mammalian prey. Eagle diets include small mammals such as squirrels, rabbits, and raccoons. Some small prey species may increase in number with fuel harvesting, while others may decrease, which could affect availability of prey for the bald eagle. A study conducted in Plumas National Forest looked at abundance of small mammal prey species in areas of light thinning (50% canopy cover), heavy thinning (30% canopy cover), group selection, and control areas of forest (Kelt et al. 2011). Results showed some changes in prey species abundance post-treatment; increased presence of chipmunks was most notable over the study, especially in lightly thinned treatment areas (Kelt et al. 2011). Variations in prey abundance (chipmunks, woodrats, flying squirrels, and deer mice) were seen based on forest type and year, which have varying amounts of available resources (like conifer cones) and varying environmental factors, like precipitation in a given year (Kelt et al. 2011). It is important to note, however, that the vast majority of the bald eagle's diet is fish (American Eagle Foundation, Dunstan and Harper 1975), so effects to small mammals should not have a significant effect on eagles who commonly acquire prey from Lake Almanor. Bald eagle home ranges are adjacent to Lake Almanor. Fish stocking occurs in the lake, typically between April and December of each year (CDFW 2019). Brown trout, Chinook salmon, and Eagle Lake trout were stocked in Lake Almanor in 2019 (CDFW 2019). The lake also does not freeze solid over the winter, resulting in year-round foraging opportunities for numerous bald eagle pairs. The majority of the bald eagle diet is comprised of fish, ranging from 70% to 90% according to one report (American Eagle Foundation). Similarly, a study conducted in north-central Minnesota found that fish were 90.1% of the diet when looking at prey remains in bald eagle nests (Dunstan and Harper 1975). As this primary food resource is readily available in close proximity to home ranges via Lake Almanor, the effects to eagle prey from treatments in terrestrial foraging habitats are expected to be minimal.

Thinning treatments, which include mechanical thinning, hand thinning, pile burning, mastication, and underburning, would immediately result in a less dense forest. After thinning, stand density indices (SDIs) would be maintained at 60% or less of the maximum SDI. Treatment has been designed to keep a less dense forest structure in place for 20 years; this decreases the need to re-treat in the short-term and a large portion of the mid-term. A decreased need for re-treating in upcoming years would result in fewer disturbance activities.

Up to 7 parking lots may be added within the project area, which could result in disturbance during work on the lots. 1 parking lot is already established on the system but would be improved. Other potential parking lots are not established by the Forest Service but instead are user-made. These lots would be brought onto the National Forest System. No paving would take place; parking lots would be covered with gravel or natural surfaces. As recreationists are already using the space for these lots, human disturbance already occurs in these locations. Additional disturbance is only expected during parking lot construction. Like other project activities, the parking lot work would take place under the LOP that prohibits actions within approximately 0.4 miles of any active nest tree during the bald eagle breeding season (January 31st through August 31st).

Changes to bald eagle habitat would not occur in the project area outside of treatment areas. Suitable habitat, including areas of open, mature vegetation structure, would continue to be present after treatment activities.

Home Range

Research conducted in Klamath Lake, OR, indicated an average breeding home range of 6.6 km^2 (Frenzel 1984), equaling a radius of approximately 0.9 miles. The 0.9 mile home range radius (totaling 1,629 acres per home range) was used for this project's analysis.

Effects at the home range scale would include any habitat alteration that changes the overall proportions of habitat suitable for nesting and foraging. Habitat around the Switchback nest tree would undergo mechanical thinning treatments. The Rocky Point nest, that has deteriorated and is located just outside of the West Shore Project, is adjacent to some stands that will experience hand thinning; other stands adjacent to the nest will receive no treatments. A small portion of the home range for the Rocky Lake nest, 3 acres, overlaps with the northwestern corner of the project. The 3 acres of 5M habitat in the Rocky Lake home range will undergo mechanical thinning and fuels treatments. The Rocky Lake nest itself is outside of the project area.

The West Shore Project will retain large trees preferred for nesting and roosting. Snags with DBHs larger than 15 inches and some trees with defects preferred for roosting will also be retained. Therefore, it is unlikely that the West Shore Project will alter habitat at a scale that would impact bald eagles' ability to forage, roost, and nest within these home ranges. All of the proposed treatments, regardless of their occurrence in suitable or unsuitable habitat, would accelerate the treated areas toward more suitable bald eagle habitat.

Cumulative Effects

Effects of wildfire are seen within the project area and into actively utilized nesting areas for the bald eagle. The Chips Fire, which occurred in the summer of 2012, has a burn scar that extends up to just 1.5 miles away from the Switchback nest, and the Chips fire perimeter overlaps the Rocky Point nest. While wildfire can result in stand-replacing effects, it can also open up the forest canopy, which could result in a forest structure that enables easier flight paths preferred by eagles (Andrew and Mosher 1982).

Within the project area in the bald eagle home ranges, various silviculture and fuels activities have modified the landscape in recent decades. Outside of the project area, private timber harvesting occurred within the bald eagle analysis area via timber harvest plans (THPs).

The project area is open to woodcutting. Activities such as Christmas tree cutting, posts and poles, and firewood cutting and hazard tree removal along roads, trails, and campgrounds have and will continue to have little effect on stand structure and size class distribution except within small localized settings. Christmas tree cutting generally results in selection of small (maximum 6 inches dbh) fir trees, some of which may otherwise grow into midstory or overstory trees; however, Christmas tree cutting is typically concentrated in a narrow band along main roads in November and December. This should not significantly affect bald eagles, which prefer much larger trees than those typically selected for Christmas trees and posts and poles.

The analysis area is open for use by the public on National Forest lands. Ongoing recreation use consists of camping, fishing, hiking, hunting, mountain biking, cross-country skiing, boating, OHV use, pleasure driving, and wildlife watching. Use is expected to continue at the current rate, which is expected to have a minimal effect on bald eagles and appropriate habitat near Lake Almanor. The Lake Almanor Trail is located approximately 60 meters from the Switchback historical nest, which has seen consistent successful use in the area every year since at least the 2010 breeding season. The Almanor Campground and Almanor home sites are approximately 265 meters and 50 meters from the nest tree, respectively. Thus, it is possible that the eagle pair is tolerant to human activity.

Other ongoing management activities within or adjacent to the West Shore Project area, treatment areas, and bald eagle home ranges include annual fish stocking in Lake Almanor, which would maintain available food sources for eagles. Other management activities may include rust resistant sugar pine enhancement, maintenance of roads, trails, and recreation aspects, and invasive plant treatments. No changes in frequency of resistant sugar pine enhancement or invasive plant treatments are expected. Thus, ongoing management activities are expected to have minimal effects on bald eagles, and an LOP would be in place to mitigate negative effects.

In the future, 18 acres are planned for tree release and weed on NFS lands within the bald eagle analysis area to improve the chances of remaining trees to grow to large sizes more quickly. 32 acres are planned for prescribed wildfire for wildlife habitat, which would improve wildlife habitat and re-establish a healthy fire regime. 99 acres of private land in the analysis area are planned for group selection, which would remove groups of trees, resulting in a more patchy forest with uneven-aged structure in the future. Expansion of the Lake Almanor Trail, proposed by the Almanor Recreation and Park District (ARPD), may extend into the project area less than 1 mile; disturbance effects may be expected during trail creation activities, with short- to long-term effects from recreation on the trail expected to be minimal.

Proposed Action - Summary of direct, indirect, and cumulative effects, and viability determination

All nest sites are within 0.3 miles of a primary food supply for bald eagles, Lake Almanor, and the largest trees will be retained in every stand, making the potential for nesting habitat being eliminated for the species unlikely. There would be limited potential for reductions in potential roost trees and nest trees compared to the availability of numerous large green trees within the analysis area, as well as limited potential for disturbance to individuals during the short duration and seasonality of project activities. The retention of large snags, which are preferred for perching, ensures that preferred habitat for perching is maintained for the species. The LOP in effect from January 31 to August 31 would mitigate human-caused disturbance effects to sensitive nest sites during breeding season. Further, habitat for bald eagles would improve over the short- to long-term via a more open forest habitat for flying through, and stand conditions that allow for quicker growth of remaining trees, resulting in those trees becoming important habitat components preferred by bald eagles. Also, despite very close proximity to trails, campgrounds, homes, and burned areas, bald eagles have had consistent breeding success in the West Shore Project area. Thus, the proposed activities in Alternative 1 for the West Shore Project **may affect individual northern bald eagles (MAI)**, but are not likely to result in a trend towards federal listing or loss of species viability.

No Action

Direct, Indirect, and Cumulative Effects, and viability determination

A gradual, further decrease in habitat quality is expected for the species. In the long-term, bald eagle habitat quality would likely decline due to increasingly overstocked stands with trees stressed for water, sunlight, and soil nutrient resources, making trees in these stands more susceptible to disease and insect infestations, and ultimately mortality. High-intensity wildfire risk would continue to increase, leaving habitat at greater risk for elimination. Stressed trees would continue to have a greater chance of wildfire-induced mortality than more resilient trees in less stressed stands. Of the 3 bald eagle home ranges partially located in the project area, 916 acres of the Switchback home range, 696 acres of the Rocky Point range, and 3 acres of the Rocky Lake home range are located within the West Shore Project area. If the entire 6,311-acre project area were to experience high severity wildfire, this could affect slightly less than 4 full home ranges (1,629 acres each). Lake Almanor would still be available as a food source after a fire, allowing foraging opportunities to still exist. Given the risk of high severity wildfire and the increasing densification of stands, the implementation of Alternative 2, the No Action Alternative, **may affect individual northern bald eagles (MAI)**, but is not likely to result in a trend towards federal listing or loss of species viability**.**

California spotted owl

The following analysis evaluates effects to CSO habitat at 4 spatial scales; the project area (6,311 acres), PAC (300 acres), HRCA (1,000 acres), and home range (4,400 acres). Potential effects at each of these scales are addressed below.

Proposed Action

Direct and Indirect Effects

Project Area

West Shore project treatments include mechanical thinning, hand thinning, pile burning, mastication, and underburning in selected stands within the project area. Treatment effects to late seral habitat features such as large trees, snags, and large logs are minimized with IDFs intended to protect these features. The largest overstory trees, those with a 30 inch and larger dbh, would be retained in order to conserve ecosystem characteristics important for wildlife. Snags with a 15 inch dbh and larger would also be retained for wildlife habitat purposes. Where a snag is deemed hazardous to the operations of the timber sale, burning, or post-harvest activities, they may be dropped. While measures are in place to protect these habitat features, there is uncertainty as to how many snags will be dropped for safety. An IDF is in place "to encourage snag recruitment, retain an average of 2 mid- and large diameter live trees per acre that are in decline, have defects, or desirable wildlife characteristics (e.g., teakettle branches, stick nests, large diameter broken top, cavities, and woodpecker excavations) where they exist." This would further mitigate any issues with the incidental loss of snags. Some surface fuels would also be retained. 5 tons of surface fuels greater than 3 inches in diameter would be retained per acre in the project defense zone, and 10 tons of surface fuels greater than 3inches in diameter would be retained per acre in the project threat zone.

Table 7. Habitat distribution in California spotted owl analysis area, excluding existing plantation cover type, within the West Shore Project.

Habitat patch description*	CWHR (equivalent where applicable)	Percentage of PAC	Percentage of HRCA	Percentage of Home Range
Low canopy cover	S, P	0.9%	2.3%	15.3%
Pole sized conifer with greater than or equal to 40% cc	3- M and D	0.0%	0.0%	0.6%
Medium sized conifer (11-24 inch dbh) with 40-59.9% cc	4-M	0.0%	59.4%	37.9%
Medium sized conifer (11-24 inch dbh) with greater than or equal to 60% cc	4- D	81.4%	27.7%	8.6%
Mature forest greater than 60% cc	5- D	0.0%	3.0%	1.2%
Mature forest with 40-59.9% cc	5-M	16.5%	8.1%	6.2%

*Acres of plantations not included.

Protected Activity Center

The function of the 300 acre PAC is to provide high quality nesting, roosting, and foraging habitat adjacent to the nest site or activity center. The 300 acre size is based on an assessment of nest stands and

stands adjacent to the nest stand, the average cumulative size being approximately 300 acres (Verner et al. 1992). Also, about half of nightly foraging locations occurred in an area of about 317 acres around nest stands on the Sierra NF (Verner et al. 1992).

To reduce negative effects to CSOs, there would be no mechanical treatments within the PAC. Direct effects would take place from treatment activities via hand-thinning small diameter trees, piling, pile burning, and underburning. These treatment activities are proposed to reduce the risk of stand-replacing wildfire. Hand thinning could take trees up to 10" dbh within the PAC. Disturbance effects would take place during these silviculture and fuels activities. Further restrictions would occur for the 500-foot (18 acre) radius buffer area closest to the most recently used nest, with ladder fuels up to 6" dbh being hand thinned and piled, and ladder and surface fuels being piled in a manner that would minimize the risk of crown fire ignition during fuels treatments. To reduce the risk of loss of key ecosystem components and habitat structures, raking may be used around these structures. It is important to note that all acres within the PAC will still have the same CWHR classifications after treatments, which further emphasizes the low risk to owls from the proposed PAC treatment activities.

Some changes to PAC habitat are expected post-treatment. Some snags may be lost due to safety needs during treatments. Recruitment of new snags may occur if some trees die during prescribed fire activities. Fuels activities may result in some minimal opening of the PAC canopy from burning. A more open stand structure would result in more open areas for flight. Coarse woody debris (CWD), which serves as cover for some prey species, would be reduced during fuels treatments. Availability of prey may be modified after thinning treatments – northern flying squirrels, which are more common in more dense, homogeneous forests (Hobart el al. 2019), may be reduced in number, while woodrats, which are more commonly found in less dense, more heterogeneous forests (Hobart et al. 2019), may increase in the PAC. Woodrats appear to be a higher quality prey item for the CSO (Hobart et al. 2019). In the long-term, the risk of stand replacing wildfire would be reduced after treatment activities. An increasingly heterogeneous forest structure would emerge in the PAC in the long-term.

An LOP would be in place from March 1st to August 15th that would apply to stands within ¼ mile of all spotted owl PACs unless surveys confirm that spotted owls are not nesting. The LOP would be lifted after surveys if no nesting spotted owls are confirmed. This would mitigate risks to nesting owls and offspring from project treatment activities.

Home Range Core Area

The Home Range Core Area (HRCA) is a subset of an owl's entire home range, and represents an area of concentrated use within the home range. The size of HRCAs for the Almanor RD is based upon a mean home range core area (as determined by radio-telemetry) plus one standard error.

Direct effects would occur in the form of silviculture and fuels treatments within the HRCA. Changes to stand CWHR classifications would be minimal, with 27 acres of high quality nesting and roosting habitat gained and 10 acres of overall habitat (nesting, roosting, and/or foraging) gained. Trees 30" dbh and larger and conifer snags 15" dbh and larger would be retained within the limits of safety and operability. Any of these larger trees or snags that are felled for safety and operability would be left on site for wildlife considerations. Trees that are suppressed, of considerably poor health, or appreciably diseased would be removed in favor of retaining healthy trees, with the exception of retaining 2 live trees per acre, on average, that are in decline or that possess defects or other characteristics which wildlife select for, including the CSO. A component of healthy understory trees would be retained to promote structural diversity. Healthy, shade-intolerant pine (ponderosa, sugar, and Jeffrey) and Douglas-fir would be favorably retained over shade-tolerant white fir trees. Since the HRCA is within the wildland urban interface (WUI) threat zone, canopy cover of at least 40% would be retained in the treated stands within the HRCA. As discussed in the project's Proposed Action, Purpose, and Need (PAPN), the largest trees in

the HRCA would be kept in the mid- and upper-canopy to retain at least 40% canopy cover averaged over treatment units. More large trees, clumps of small trees, coarse woody debris, and shrub cover would be retained in the HRCA treatment compared to surrounding areas of the project receiving treatment. HRCA treatments have been arranged so as to not compromise the overall effectiveness of the landscape fire and fuels strategy. Also, small openings consistent with the natural range of variation (0.1-0.74 acres; from Safford and Stevens 2017) would be created to increase heterogeneity for foraging owls and other wildlife. These openings would get larger as one moves toward the outer area of the HRCA. These openings may provide improved foraging habitat (USDA 2019).

Despite disruption during silviculture and fuels treatment activities, the risk of stand-replacing wildfire would decrease, and remaining trees would have an increased capacity to grow to a large tree size preferred by owls more quickly than in overstocked stands. Stand resiliency would also improve, with less competition in place between remaining trees for sunlight, water, and soil nutrient resources. Less constrained trees would be less susceptible to tree mortality from disease, insect infestations, and drought.

The LOP on treatment activities that would be in place from March 1st to August 15th would extend ¼ mile into HRCA stands that surround the PAC unless surveys confirm that spotted owls are not nesting. As discussed, the LOP would be lifted after surveys if no nesting spotted owls are confirmed. The LOP extending into areas of the HRCA would further reduce risk to owls in the vicinity.

Home Range

Effects at the home range scale would include any habitat alteration that changes the overall proportions of habitat suitable for nesting and foraging. **Error! Reference source not found.**7 above depicts the habitat types currently present within the home range, including the PAC and HRCA.

Proposed treatments, regardless of their occurrence in suitable or unsuitable habitat, would accelerate the treated areas toward suitable spotted owl habitat. Thinning treatments would allow the remaining trees the opportunity to have a faster growth rate, causing them to become large trees in a shorter time frame than would occur in current overstocked conditions. More large trees on the landscape would increase the amount of quality nesting habitat in the home range. Less dense stands would contain more resilient trees with improved access to sunlight, water, and soil nutrient resources. Treatments would favor shade intolerant, fire-resistant species such as ponderosa and Jeffrey pine.

After project treatments, the forest structure would be more open in some areas. Effects would be minor in nesting habitat, where the aforementioned habitat preferences are more critical to spotted owls, through treating only via hand thinning and underburning to leave larger trees, snags, and logs intact and reduce the tree strata that owls avoid. Plantation acreage throughout the home range does not provide the heterogeneous, complex structure needed for the species. The creation of small openings in plantations would improve foraging habitat for owls (USDA 2019). Canopy cover in overstocked stands would be reduced. High quality nesting and roosting habitat (CWHR 5, M and D) would decrease by 12%, or 39 acres, while overall suitable habitat would decrease by 22%, or 528 acres. Most change seen in foraging habitat from project treatments would occur in lower quality habitat, 4M. A total of 459 acres (~10% of the home range) of foraging habitat that would change to a different CWHR class would be in 4M habitat. It is important to consider, however, that while CWHR classification would change as described, CWHR likely underestimates viable foraging habitat (USDA 2019, pp. 23-24). Thus, the actual number of acres reduced to non-foraging habitat is expected to be minor. Disturbance effects could also occur during silviculture and fuels treatment activities; however, a behavorial (flushing) response was documented to occur only when loud noise (chainsaw, helicopter) occurred within approximately 350 feet from a nest and after young had already fledged (USDA 2019). Response to fire can be highly variable (Rockweit et al. 2017). Existing prey populations and potential roosting and nesting sites may be affected through the reduction of snags and large logs as a result of proposed thinning treatments. Prey species like the

northern flying squirrel are associated with abundant presence of large snags, while research indicates that species like mice, voles, and shrews have increased after thinning treatments (Wilson and Forsman 2013). However, underburning should create some new snags that will eventually become logs, and snag and logs IDFs would retain some dead wood. Underburning should also increase understory growth, which would benefit small mammals.

Cumulative Effects

The home range scale is used to determine how the West Shore Project may contribute to effects from past, ongoing, and future actions. This scale encompasses an average home range or the largest area utilized by a breeding pair of owls to meet their life history requirements (USDA 2019). The following discussion focuses on those past, present, and reasonably foreseeable future activities. All of the activities listed in the West Shore Project's PORFFA (see the project record) were considered for their cumulative effects on the California spotted owl and the owl's habitat.

Vegetation communities within the analysis area have changed over time as a result of past management actions, including fire exclusion, logging, reforestation (pine plantations), human-caused wildfires, prescribed fire, and the development of the Prattville, Lake Almanor West, and Big Meadows communities. Current conditions within the proposed West Shore treatment area include overly dense natural forested stands and over-stocked pine plantations planted in the 1960s and 1970s. These dense conditions reduce tree vigor and increase stress on forest stands making them more susceptible to insects, disease, drought-related mortality, and high-severity wildfire. Trees intolerant of shade, such as ponderosa pine, Jeffrey pine, sugar pine, and aspen, are at the highest risk of mortality.

Numerous silviculture and fuels activities took place within the CSO analysis area in the project area, and the culmination of these activities has contributed to current conditions. Outside of the project area, private timber harvesting took place in the analysis area. South of the HRCA, roughly 862 acres of the home range was salvage logged within the Chips Fire burn scar.

The spotted owl analysis area is open to woodcutting. Snags and down logs would continue to be removed, resulting in a cumulative loss of these habitat components. Snags are recruited annually from live trees through natural processes at a rate that may sustain this loss within the spotted owl analysis area. Snag and log removal is most common along, or within a short distance from, open roads.

Activities such as Christmas tree, posts and poles, and firewood cutting and hazard tree removal along roads and trails have and will continue to have little effect on stand structure and size class distribution except within small, localized settings. Christmas tree cutting generally results in selection of small (maximum 6 inches dbh) fir trees, some of which may have otherwise grown into midstory or overstory trees; however, Christmas tree cutting is typically concentrated in a narrow band along roadways accessible in November and December.

The spotted owl analysis area is open for use by the public. Ongoing recreation use may consist of camping, fishing, hiking, hunting, mountain biking, OHV use, pleasure driving, and wildlife watching. Use is expected to continue at the current rate. There are several travel routes constructed through the West Shore project area, including within the CSO PAC and HRCA, not all of them authorized, and the project proposes to decommission those routes. These activities at the current rate are expected to have a minimal effect on spotted owls and late and mid seral closed canopy coniferous forest habitat in the spotted owl home range.

Possible additional ongoing management activities include rust resistant sugar pine enhancement, trail maintenance, road maintenance, recreation maintenance, and invasive plant treatments. These activities are also expected to have minimal effects.

On private land, group selection is planned for 167 acres in the spotted owl home range. Group selection practices remove clusters of trees, commonly 1 or 2 acres in size, to create a mosaic of uneven-aged tree clusters in the long-term. Planting often occurs in these areas after clearing, but plantations do not provide the structural complexity needed for owls, at least in the short-term.

Proposed Action – Summary of direct, indirect and cumulative effects, and viability determination
Treatments proposed in Alternative 1 would cultivate an environment that would speed up the growth of remaining trees to a large size, an essential habitat component for spotted owl nesting and roosting. Effects from treatment activities to the most sensitive portion of CSO habitat, the PAC, would be minimized because no mechanical thinning would take place within that area. Hand thinning of small (<10 inch) trees would result in minimal changes to canopy cover when compared to what would be seen in project areas treated with mechanical thinning. As previously discussed, no CWHR classification changes would take place in the PAC, and classification changes in the HRCA would add a small amount of suitable nesting and roosting habitat. Thinning and fuels treatments would also encourage the creation of a more heterogeneous, complex forest structure than what is currently present in the analysis area. More complex structure, highly desired by spotted owls, would increase the habitat suitability of the analysis area for the species. It is important to consider the size of the project's treatment area in comparison to the size of the CSO home range on the Lassen National Forest. 5,216 acres are proposed for vegetation and fuels treatments. Given that a home range equals 4,400 acres and the fact that there has only been 1 historical CSO pair in the project area, which hasn't successfully nested since 2010, any effects from the project would only be expected to impact 1 owl pair, at most. Given the results of the above analysis of Alternative 1, the proposed activities of Alternative 1 of the West Shore Project **may affect individual California spotted owls (MAI)** but are not likely to result in a trend towards federal listing or loss of species viability.

No Action

Direct, Indirect, and Cumulative Effects, and viability determination

Given the results of the analysis of Alternative 2 and the ever-increasing risk of stand-replacing wildfire in overstocked stands, the No Action Alternative **may affect individual California spotted owls (MAI)** but is not likely to result in a trend towards federal listing or loss of species viability**.** As stands become increasingly dense and overstocked, the risk of stand-replacing wildfire would continue to increase. In the long-term, the CSO analysis area would take longer to reach the late seral, complex forest structure for which the species selects. Habitat would become less available for owls as fewer trees would have the capacity to provide important habitat components for the species. Shade intolerant, fire-resistant pine species would continue to grow to large sizes at a slower rate as tree species like white fir would continue to encroach upon the capacity of shade intolerant species to thrive. White fir and other more shade tolerant species would further dominate stands, leading to stands with more trees that are more susceptible to tree mortality from wildfire than shade intolerant pines. Trees would also become more susceptible to disease and insect infestations as constrained sunlight, water, and soil nutrient resources would continue to affect tree health.

Northern goshawk

Proposed Action

Direct and Indirect Effects

The following analysis evaluates effects to habitat at 3 spatial scales; the PACs (200 acres each), home ranges (2-mile diameter, 2,011 acres each), and project area (6,311 acres). Potential effects at each of these scales are addressed below.

Protected Activity Center

Northern Goshawk PACs are delineated at 200 acres that contain established and suspected nest stands and the most optimal surrounding forested habitat, as directed by the SNFPA SFEIS (USDA 2004). Both the Butt Creek and Prattville PACs have been active in recent years (2018 and 2019). The 400 total acres of the 2 PACs are dominated by 4D habitat (263 acres) and 4M habitat (128 acres).

No treatments have been prescribed for the Butt Creek PAC; this would result in the continuation of existing conditions, namely, vegetation continuing a slow rate of growth along current trajectories. Because the Prattville PAC is closer to a community and overlaps with the California spotted owl PAC, hand thinning, piling, pile burning, and underburning would take place in order to reduce the risk of stand-replacing wildfire within the PAC and to reduce the risk of wildfire to the community of Big Meadows. Hand thinning treatments would reduce the ladder fuels present, and pile burning and underburning treatments would reduce surface and ladder fuel loads. Within nest core areas, hand thinning could remove trees up to 6 inches dbh. Other areas in the PAC outside of the nest core area buffer [500 ft. radius from most recent nest(s)] could have ladder fuels thinned up to 10 inches dbh. A reduction in these ladder fuels would reduce high severity wildfire risk to large, old trees. Underburning would also work to reintroduce natural, healthy fire regimes on the landscape. Fuels treatments would aim to create lower intensity fire, which would reduce risk to nest trees and important ecosystem components like large trees and large snags and logs (> 15 inches dbh). Together, these treatment techniques would work to create a PAC more resilient to wildfire, and conditions would become closer to those of historic forested stands. Hand thinning would result in less intensive disturbance effects than mechanical thinning treatments set to occur in other less sensitive areas of the West Shore Project area. Impacts would be minimized through various mitigation mechanisms, including IDFs for goshawks. Due to the strategic use of less aggressive treatment practices in the Prattville PAC, no CWHR classification changes would occur in PAC stands proposed for treatment; thus, effects related to canopy cover change would not be significant.

To further protect goshawk PACs and nest trees, an LOP prohibiting treatment activities from February 15th to September 15th would be applied within ¼ mile of all goshawk PACs or within ¼ mile of a nest if a nest is confirmed. The LOP may be lifted if it is determined that the PAC is not occupied.

Home Range

Home ranges encompass habitat components necessary to meet the nesting and foraging needs of the northern goshawk. Spacing between pairs of nesting goshawks has been shown to be consistent in contiguous forested habitats. On the Klamath National Forest, the average distance between nests of breeding pairs was 3.3 km (0.3 SE), or roughly 2 miles; the study included 59 breeding goshawk pairs (Woodbridge and Detrich 1994). A similar distance was also documented between breeding pair nests on the Modoc National Forest (Woodbridge 1998). Considering this, the Butt Creek and Prattville home ranges were delineated to extend out from the active nests in a circle with a 2-mile diameter, equaling 2,011 acres each.

In addition to the hand thinning, hand piling, and underburning treatments proposed within the PAC, mechanical thinning and piling would also take place in stands in the home ranges outside the more sensitive PAC acreage. Nesting and foraging habitat acreage would see slight CWHR changes in the 2 home ranges, with foraging habitat decreasing from 374 acres pre-treatment to 361 acres post-treatment (3% decrease), and nesting habitat would decrease from 2,510 acres pre-treatment to 2,359 acres post-treatment (6% decrease). Total suitable habitat would decrease from 2,884 acres to 2,720 acres (6% decrease).

Mechanical treatments would cause disturbance during treatment activities, but habitat would improve over time. Mammal prey species may be affected directly after forest thinning with prey preferring higher forest cover decreasing and prey preferring more open forest structure increasing. Bird prey species may increase in thinned stands, thus increasing prey availability; 83% of studies focused on thinning in western coniferous forests found higher bird abundance after thinning treatments (Bayne and Nielsen 2011). Bird prey species such as the hairy woodpecker, northern flicker, and American robin have suitable habitat in more open forest environments. Treatments, would reduce surface and ladder fuels, which would create a forest structure that would be more resilient to stand-replacing wildfire. Treatments would result in a forest more closely resembling the natural range of variation historically seen in the area. This forest structure would have fewer trees on the landscape than what is seen currently in the area's dense, overstocked stands. Less dense stands would result in the remaining trees having improved capacity to grow to large tree size more quickly, a characteristic desired for nesting northern goshawks. Remaining trees would also be less susceptible to tree mortality via drought, insect infestation, and disease. Soil nutrients, water resources, and sunlight would become more available for remaining trees, resulting in healthier trees and overall healthier stands on the landscape.

This analysis also takes into account the potential effects to post-fledging areas (PFAs), areas 420 acres in size that surround goshawk nest locations, within home ranges. A PFA is a spatial representation of the area used by young goshawks until these offspring no longer require care from adult goshawks, a period of up to 2 months. Nesting and foraging habitat in PFAs would improve over the short- to long-term from thinning and prescribed fire treatments like other treated areas within the home ranges.

Project Area

The majority of the acres in the project area, 4,169 acres of 4M habitat, does not provide high quality nesting habitat for the species. Over time, the proposed treatments should return treated stands to a tree density and forest structure closer to the area's historical condition than what currently exists. The proposed thinning, located within Sierran mixed conifer, ponderosa pine plantations, and white fir stands, is designed to restore a semblance of historical stand structure, including tree densities and pattern. Stand exams indicate this area is currently characterized by a basal area of 195 square feet per acre, a canopy closure of 40% or greater, and over 735 trees per acre. The current CWHR habitat class label for the area varies from 3M (tree DBHs range from 6-10.9" and a 40-59% canopy closure) to 5D (tree DBHs greater than 24", and canopy closure greater than 60%). Post-harvest, the area is expected to be characterized by a basal area of 60 to 160 square feet, and canopy closure less than 60%. Foraging habitat (3M, 3D, 4P, 5P) would increase from 588 acres pre-treatment to 989 acres post-treatment. The largest increase in foraging habitat would be in 5P habitat, which would have a 380% increase with acreage increasing from 86 acres pre-treatment to 413 acres post-treatment. Nesting habitat would decrease from 5,130 acres to 3,332 acres, a 54% decrease. Most change in nesting habitat would occur in the lowest quality nesting habitat available, 4M. 4M acreage would decrease in availability from 4,169 acres pre-treatment to 2,585 acres post-treatment, a 38% decrease.

In developing conservation strategies for Mexican spotted owls and goshawks, Reynolds et al. (1996) indicated the importance of providing for healthy prey populations. The authors stated that since prey species are adapted to natural conditions, returning forests to more natural conditions would likely help ensure an adequate prey base for goshawks. Golden-mantled ground squirrels, a primary prey species for goshawks, generally are most abundant in open, pure stands of ponderosa and other pines (Shick et al. 2006). Shick et al. (2006) found that the strongest microhabitat element to which golden-mantled ground squirrels were associated with was an avoidance of high canopy tree density.

Snags and downed logs are important habitat components for goshawk prey species such as woodpeckers and some small mammals. Alternative 1 would not substantially alter the existing snag density within the

project area as snags would generally only be felled as hazards along roads, at landing locations, and in other cases where human safety is endangered by the snags. Roadside hazard snags would be felled from areas that may not provide optimal habitat for wildlife due to disturbances and reduced habitat effectiveness associated with roads. All snags felled for safety reasons would be required to remain on the ground as logs.

There may be some loss of snags due to prescribed burning (Landram et al. 2002), but there would also be some recruitment of snags through fire-induced mortality of living trees, resulting in little change in habitat capability. Under Alternative 1, in area thin and plantation treatment units, all snags larger than 15 inches dbh within the limits of safety and operability would be retained. Additionally, to encourage snag recruitment, an average of 2 mid- and large diameter live trees per acre that are in decline, have defects, or desirable wildlife characteristics (e.g., teakettle branches, stick nests, large diameter broken top, cavities, and woodpecker excavations) would be retained where they exist.

Although prescribed fire may consume some downed logs, prescribed fire may also accelerate the fall rate of snags (Landram et al. 2002). Therefore, recruitment of additional logs may occur to help replace those consumed. Un-thinned patches in the project area would also promote the recruitment of downed logs as snags topple with time. In addition to mitigation efforts in place to minimize human-caused disturbance and risk of mortality to goshawks, an additional LOP would take place if a new northern goshawk nest is found within any of the proposed treatment units. The nest tree would be protected if this circumstance were to occur to minimize impacts to nesting birds.

Cumulative Effects

From July 28 to August 31, 2012, the Chips Fire burned roughly 76,350 acres, starting in Chips Creek Canyon and reaching up to the southernmost portion of the Prattville PAC. The fire perimeter came within 0.15 miles of the 2004 and 2007 nest sites, with the furthest historic nest site at that time (the 2010 nest location) from the Chips perimeter being less than a quarter mile away. Site status is unknown for this home range in 2012 as surveys were not conducted in this area, most likely due to the Chips Fire. No active nest was located for the site in 2013, and in 2014, the pair shifted their nest location further north in the PAC, roughly 0.3 miles from the Chips Fire perimeter. Though it is possible that the related fire-suppression activities (crews digging line, heavy equipment activity, aerial retardant drops) of 2012 and potential salvage logging activities on private lands following the fire may have been related to the lack of nesting status for the 2013 field season, it is also possible that if the pair was present, they failed earlier in the season before wildlife survey crews conducted surveys of the area, or that crews were unable to locate them.

Lake Almanor is a major tourist draw for the area. Many people visit for camping, fishing, and other water sports. Though the lake is almost a mile from the closest nest site, recreation opportunities are not limited to the shoreline. Activities such as hiking, biking, equestrian, and OHV use may draw users to the areas where goshawks may be active. There are several travel routes constructed through the 2 goshawk PACs in the West Shore Project area, not all of which are authorized, and the project proposes to decommission some of the routes. Disturbance is expected to decrease as a result of decommissioning the unauthorized routes. Grubb et al. (2013) looked at response rates of goshawks to observed disturbances during nesting season. In their study, they found that goshawks at a distance of 78 meters from vehicle activity would have an alert respone (defined by turning their heads), but that there were no observations of the birds flushing or moving otherwise. Additionally, all birds observed in this study sucessfully fledged young, suggesting that goshawks can be adaptive to noise from passing vehicles if they are a reasonable distance from their nest, though they are attentive to the sounds of approaching vehicles.

Development of the Prattville, Lake Almanor West, and Big Meadows communities has brought in more people to the area, thereby increasing the land use in and around goshawk PACs within the West Shore

Project area. OHVs, woodcutting, and other public uses can potentially create disturbances within the goshawk PACs. Within the analysis area, the primary actions that could represent cumulative effects are fuelwood harvest activities on USFS lands. Personal fuelwood harvest could occur within the West Shore Project. The Lassen NF has one of the most active fuelwood programs in the region, selling over 16,000 cord permits in 2011. This program allows the felling of snags by woodcutters, with upper diameter limits set at 20 inches dbh for snags of commercial species of conifers, and with no diameter restrictions on lodgepole pine snags. Woodcutters are allowed to drive off-road to access snags, but woodcutting usually only happens in narrow strips along roadways.

All land management activities in the analysis area from 1999-2019 were considered for their cumulative effects on northern goshawks and their habitat. Outside of the project area, several private timber harvests took place within the goshawk analysis area between 2000 and 2018. All other silviculture and fuels activities in the analysis area took place within the West Shore Project area.

Proposed Action – Summary of direct, indirect and cumulative effects, and viability determination

While disturbance may occur during proposed project activities, the West Shore Project would work to align northern goshawk habitat with historical forest conditions for which the species select. Remaining trees in nesting habitat would have an increased chance of reaching large tree size in a shorter time frame than what would be expected without treatment; thus, nesting habitat would improve over the long-term. Foraging and some nesting habitat would be thinned during treatment activities, and high severity wildfire risk would decrease in all treated areas of the goshawk analysis area. It is important to consider the size of the project's treatment area in comparison to the size of the northern goshawk's home range. 5,216 acres are proposed for silviculture and fuels treatments, and almost all of the acreage for the 2 treatment types overlap within the same acreage and stands. Given that a home range equals 2,011 acres, potential impacts from the project would only be expected to have short-term impacts for up to 2 goshawk pairs. Given the above analyses, the proposed activities within Alternative 1 of the West Shore Project **may affect individual Northern Goshawks (MAI),** but they are not likely to result in a trend towards federal listing or loss of species viability.

No Action

Direct, Indirect, and Cumulative Effects, and viability determination

Given the results of the analysis of Alternative 2 and the increasing risk of stand-replacing wildfire, the No Action Alternative **may affect individual Northern Goshawks (MAI)** but is not likely to result in a trend towards federal listing or loss of species viability. High severity wildfire risk would continue to increase in overstocked stands that would become even denser in the long-term. These overstocked stands would continue to experience slowed growth rates, making it take longer for trees to reach a large size preferred by nesting goshawks; this issue would become further exacerbated in the long-term. Pine trees, with fire-resistant but shade-intolerant qualities, would continue to have difficulty reaching large sizes in dense, shaded, overstocked stands with slow growth rates. Shade-tolerant species like white fir would further dominate stands, leading to stands that are more susceptible to tree mortality from wildfire than stands dominated by fire-resistant tree species. Trees would also become more susceptible to mortality via disease and insect infestations. Competition for sunlight, water, and soil nutrient resources would continue to increase in stands, making it more difficult for trees to thrive.

Pacific fisher

The following analysis evaluates effects to habitat at 2 spatial scales; the project area (6,311 acres) and the home range (4,200 acres). Potential effects at each scale are addressed below.

Proposed Action

Direct and Indirect Effects

Project Area

Suitable Pacific fisher foraging, denning, and resting habitat will be modified in the project area during treatment activities. Plantation acreage is not discussed below as plantations do not provide suitable habitat for the species.

Treatments in 4M habitat would result in an increase in the health and growth capability of the remaining "released" trees, and there would be acceleration toward high quality fisher habitat or late seral, dense forest (size class 5, M or D) that includes high levels of structural complexity, which is currently lacking in the project area. Treatments would reduce canopy cover that would result in CWHR class changes for 1,298 acres of 4M habitat and 361 acres of 4D habitat. Thinning down to the project's desired canopy cover would lead to a decrease in foraging habitat availability. Most change would occur in 4M habitat, which is lower quality foraging habitat that is not selected for any other life function of the species. The highest quality denning habitat, 5D, would be reduced by 9 acres in the project area, while 5M habitat would increase by 153 acres.

In the short- to mid-term, canopy cover reduction would lead to a decrease in habitat quality for resting and denning. It would also, however, provide the remaining trees an increased chance to grow more quickly into large trees preferred by fishers for rest and den sites. These short- to mid-term effects would be mitigated in part by the retention of the elements most important for fisher denning, resting, and foraging. These elements include snags, retention of an average of 2 wildlife (or defect) trees per acre, retention of 5 tons of surface fuels > 3 inches in diameter per acre in the defense zone and 10 tons per acre in the threat zone, and retention of all live trees >30 inches dbh. The silviculture prescription and IDFs that retain valuable elements of structural diversity for fishers aid in mitigating impacts to the species (Garner 2013, Truex and Zielinski 2013, Sweitzer et al. 2016). Fisher detections occurred in an array of CWHR classes. Of the 4 stations that had fisher detections, 1 station was in 4D habitat, 1 was in 4M habitat, 1 was in 5P habitat, and 1 was in 4P habitat. Overall, canopy cover reduction and other changes in overstory and understory structure from mechanical thinning and hand thinning may lead to fishers avoiding treated areas and changing their movement patterns in the vicinity (Garner 2013, Sweitzer et al. 2016) in the short-term.

The majority of the project area, 5,216 acres, is proposed for fuels treatments. Underburning would be used to reduce the risk of high severity wildfire through the reduction of surface and ladder fuels. Coarse woody debris, a component of structural complexity, would be reduced during fuels treatments, but the IDFs that retain larger surface fuels would minimize impacts from reductions by ensuring that some surface fuels remain in place. While no fisher dens have been discovered in the project area, and kits are usually weaned and more mobile by June, smoke from prescribed fire during spring (if fuels treatments were deemed appropriate to take place in spring) could impact developing kits (Thompson and Purcell 2016). Thus, if prescribed burns were to occur before June, a den was nearby, and kits were not more mobile, smoke could impact kits.

Thinning and fuels treatments would improve and increase suitable fisher habitat in the long-term. As previously mentioned, there would be an increase in the resilience and growth of the remaining released trees, leading to an increase in the currently lacking late seral forest habitat in the project area. In addition, conifer thinning treatments that would occur in habitat not currently suitable for the species would accelerate the potential for late seral conditions, leading to the creation of habitat in areas where no suitable habitat currently exists. The proposed thinning and fuels reduction treatments in fisher habitat, as well as thinning, fuels activities, and mastication in units not considered fisher habitat, but nearby, would

reduce the risk of large, stand-replacing wildfire, which could reduce or eliminate available fisher habitat entirely if such an event were to occur. Fuels treatments and reduced ladder and surface fuels post-treatment would encourage the re-establishment of healthy fire onto the landscape in treated areas. Fire is a natural ecological process, and fires within the natural range of variation (Safford et al. 2012; Safford and Stevens 2017) recruit essential habitat elements, such as snags and den cavities, increase abundance of some fisher prey species, and contribute to habitat resiliency (Spencer et al. 2015).

Zielinski et al. (2004b) suggested that fishers require multiple resting structures distributed throughout their home ranges. Zielinski et al. (2004b) also suggested that "managers can maintain resting habitat for fishers by favoring the retention of large trees and the recruitment of trees that achieve the largest sizes." With Alternative 1, snags greater than 15 inches dbh would be retained in proposed thinning units. Snag recruitment would be further encouraged through retaining 2 mid-size and large diameter live trees per acre that are in decline, have defects, or possess desirable wildlife characteristics. Unless snags need to be dropped for safety and operability reasons, they would be left in place. Also, the thinning treatments would accelerate the growth of trees to a larger size class, some of which will eventually die, which would facilitate the creation of large snags.

Clearing is proposed near powerlines throughout the project ultimately to reduce fire hazard risks. Identified hazard trees near powerlines would be removed, as well as any other vegetation within 40 feet of the center line of the powerline that could potentially pose a hazard within the next 5 years. Smaller vegetation, such as small trees and shrubs, near power poles and towers would be removed. Trees would be thinned to a basal area of 60 to 100 square feet per acre in the area 40 to 100 feet from the powerline's center line. Largest trees in healthy condition would be prioritized for retainment in these thinning areas. Disturbance effects would be expected during treatment activities. Clearing would likely be repeated as maintenance every few years to keep fire hazard risk reduced. Fishers would be less likely to use these thinned areas after clearing. Clearing around powerlines in higher quality habitat would reduce habitat connectivity in those areas. Pattison and Catterall (2019) documented that linear forest clearings approximately 8 meters in width, narrower than the proposed clearing around powerlines in the West Shore Project area, facilitated movement of both large and mid-sized carnivores, including fishers, suggesting that interspecific interactions may occur more frequently following these changes. Mid-sized predators preferred forests to cleared areas (Pattison and Catterall 2019). Mid-sized predators included in the study were fisher, bobcat, red fox, marten, and weasel (Ibid.). While mid-sized predators moved via linear travel less frequently than large predators (grizzly bear, cougar, gray wolf, lynx, and coyote), mid-sized predators used clearings more often for travel than contiguous forest when linear travel did take place (Ibid.). In addition, mid-sized carnivores crossed transects with linear clearings 86.5% of the time compared to crossing all transects 92.7% of the time (Ibid.), indicating that clearings will often be crossed if necessary. However, this willingness to cross openings would expose fisher to higher predation risk by larger carnivores such as bobcat, cougar, and coyote.

Clearing along Highway 89 is also proposed. To provide for a vehicle recovery area, a buffer area for vehicles that stray off the roadway to get back onto the road or "recover," throughout the project area, all trees within 50 feet of the pavement would be cleared with the exception of conifers 30" dbh and larger that have not been identified as hazard trees (Angwin et al. 2012). Short- to mid-term avoidance effects would be expected from clearing activities as fishers avoid areas of significant human disturbance and areas with little forest cover (USDI 2004). Clearing would likely be repeated as maintenance every few years to maintain the buffer. The proposed clearing would create openings, which fishers avoid. Clearing also reduces habitat connectivity, especially in cleared areas along the highway in the southern half of the project area, where higher quality habitat occurs. As mentioned above, linear forest clearings facilitate carnivore movement, indicating that interspecific interactions, interactions between different species, during linear travel and crossing may increase after clearing operations (Pattison and Catterall 2019). The risk of predation may also increase as larger predators select cleared areas for linear travel over forested

areas (Ibid.). Overall, however, the habitat on the east side of Highway 89 is heavily used for recreation (i.e., horseback riding, bike trail, campground, houses and cabins), and this area is in the defense zone, which is proposed to reduce fuels (and habitat) more so than the west side given the proximity to the communities. Risk of wildfire would be reduced around roads after this treatment. Human-caused wildfires are commonly started from campgrounds, houses, and roads. The fuel break on Highway 89 would reduce the severity and probability of wildfire starting from an ignition next to the main road. It would also reduce the probability that a human-ignited wildfire that started from the heavy recreation area on the east side would reach the more contiguous forest and wildlife habitat (owl PAC, goshawk PAC, and most fisher detections) on the west side of the highway.

Habitat alteration may also influence predation rates as predators like bobcats, coyotes, and mountain lions get improved access in opened up areas. Wengert (2013) found that the encounters between bobcats and fishers were more likely in more open habitat and that predation risk increases with decreasing distance to open or brushy habitats. Brushy habitat in the study focused on areas of recent clear-cuts or intensely thinned stands, indicating a possible link between human activities and fisher predation (Wengert 2013). Thus, proposed thinning treatments could increase the risk of mortality from predation shortly after treatment takes place.

Fishers may be affected by human-caused disturbance during project activities and in the short-to mid-term as habitat in treatment areas is changed. Due to their wide ranging, mobile nature, individual fishers are unlikely to be in one particular place for an extended period of time outside of the denning season.

Home Range

The most relevant information for the Pacific fisher home range comes from the Stirling Reintroduction Project, which focuses on the population of fishers residing in the northern Sierra; these furbearers have an average home range of 15,382 acres for males and 4,200 acres for females (calculated from Powell et al. 2014). As mentioned previously, these ranges equal a diameter of 5.5 miles for males and 2.9 miles for females (Powell et al. 2014).

For the home range analysis, we used a female home range centered on detections to quantify effects of the project to a possible breeding individual's home range, similar to using breeding home ranges for CSOs, eagles, and goshawks. We used a female home range because females are solitary in raising their kits. Males can be wide-ranging (Powell et al. 2019) and transient, and do not drive fisher populations like females (Powell and Zielinski 2005), and therefore would have a much lower effect on population viability.

There are no established home ranges in the project area for the species. While an area the size of a female home range is being utilized as the analysis area for the fisher for this project, it is important to note that this is essentially a "pseudo home range" created from 3 detections during the winter of 1 survey season. This pseudo home range will also help in analyzing the cumulative effects of a fisher that occupies a home range that only partially overlaps the project area. This section of the analysis looks at effects to the home range from the proposed project. The cumulative effects section will speak to other activities affecting the pseudo home range.

Effects at the home range scale consider habitat modification that alters the amount of habitat suitable for resting, denning, and foraging. Habitat modification will only occur in stands selected for treatment, leaving the rest of the fisher home range unaltered. Unaltered areas should not see a change in capability to provide habitat for fishers. All treatments, regardless of their occurrence in currently suitable or unsuitable fisher habitat, would accelerate treated project areas toward becoming suitable fisher habitat.

Throughout the project's treatment areas within the home range, some reductions will result in a different habitat CWHR classification. Foraging habitat that is treated down to the project's desired canopy cover reduction would lead to a decrease in foraging habitat quality.

Table 8. Acres of suitable Fisher habitat within the West Shore home range.

*CWHR Type[1]	Habitat Type	Fisher Home Range Pre-treatment (acres)	Fisher HR Post-treatment (acres)
5D, 5M, 4D	Denning	835	871
5D, 5M, 4D, 4M	**Total Suitable Habitat (Including Foraging)**	**2,184**	**1,979**

Denning habitat would increase by 4%, while overall suitable habitat (denning and foraging) would decrease by 9%. Reductions would take place using an average reduction in canopy cover to 40%. In the short- to long-term, all of the aforementioned stands would experience accelerated growth trajectories to becoming suitable fisher habitat.

Mechanical thinning is proposed on 522 acres, or 12.3%, of the fisher home range. As fishers have been known to avoid areas where significant human disturbance is occurring (USDI 2004), avoidance of treatment areas would be expected during treatment activities. Avoidance may also occur post-treatment due to the overall reduction in thinning of forest stands as fishers select for dense forests with high biomass (Spencer et al. 2008).

Fuels treatments are proposed to restore a healthy fire regime and to reduce the risk of stand-replacing wildfire. Occurrence of high severity wildfire in appropriate fisher habitat would result in a greater likelihood of significant reduction in canopy cover and habitat components important for fisher denning needs, like large live or dead trees and logs with defects such as cavities and platforms. Healthy fire regimes would also aid in the recruitment of necessary habitat components like snags and cavities (Spencer et al. 2015). Prescribed fire would reduce surface fuels, a component of structural complexity; however, IDFs that would retain some larger surface fuels are in place.

Untreated areas within the home range would experience continued vegetation growth along current trajectories. The Butt Creek goshawk PAC is being left untreated to protect the PAC. With the exception of the occurrence of unpredictable events, such as wildfire, no short-term effects from treatment activity disturbance or vegetation change would be expected in untreated areas of the home range. Over time, forest stands would become denser, adding to the area's already high surface and ladder fuel loads. Denser stands would further increase the risk for stand-replacing wildfire to occur. Also, trees within overstocked stands would grow at slower rates, making it more difficult to attain the large tree size associated with fisher denning habitat. Trees in overstocked stands would also continue to be more susceptible to tree mortality from disease, insect infestation, and competition for sunlight, water, and soil nutrient resources.

Cumulative Effects

All of the activities listed in the West Shore Project PORFFA (see the project record) were considered for their cumulative effects on fishers and their habitat. The cumulative effects boundary was delineated at the 2.9 mile diameter (4,200 acre) circle representing the female Pacific fisher range. The following discussion focuses on those past, present, and foreseeable future activities.

Effects to connectivity for fishers would be minimal as high quality habitat that fishers select for around Lake Almanor is limited to a narrow strip near the lake's shore, where most recreation activity in the area occurs, making the area less suitable for fishers than if considering habitat quality alone. It is also notable that the high quality habitat is not well connected to other high quality habitat as it is surrounded by intermediate and low quality habitat, which does not result in a corridor of connected habitat for the fisher at the landscape scale. As shown, detections in the project area were largely discovered away from the higher quality habitat. In addition, treatments in high (selected for), intermediate (neither selected for or against), and low quality (selected against) habitat would all work to accelerate treated areas to becoming suitable fisher habitat. The 2004 SNFPA ROD direction (p. 7, 53) is to minimize old forest fragmentation, which would be followed in this project, further reducing potential effects to connectivity.

The fisher analysis area has experienced extensive land management in the past. Various silviculture and fuels treatments have modified the landscape to its current condition. Outside of the project area, private timber harvesting has taken place within the fisher home range in recent years via several timber harvest plans (THPs). Other activities on private land impacted the fisher analysis area as well over the last 20 years. Past activities included 11 acres of clearcutting, 8 acres used for fuel breaks or defensible space, 1,927 acres for group selection, 43 acres for selection, and 204 acres for shelterwood removal. Group selection involves the removal of groups of trees in a small area, usually 1 or 2 acres in size, to create a mosaic of even-aged tree clusters that will grow to form an uneven-aged forest. Fishers may avoid these types of openings in the short-term. Planting often occurs in these areas after clearing, which may provide some cover for fishers to move through, but plantations do not provide the structural complexity needed for the species. Acreage involving selection focuses on the selection of individual trees for stand thinning, instead of removing larger groups of trees. Selection would result in disturbance during treatment activities but should have minimal effects to fisher habitat over the long-term.

Past fuels reduction treatments could have affected amounts of small mammal prey available to the fisher. Some small prey species may decrease with these treatments, while others could increase. A study conducted in forests in northeastern Oregon indicated a decrease in red squirrels and red-backed voles in stands where fuels were reduced, while numbers of chipmunks increased (Bull and Blumton 1999).

Activities such as Christmas tree, posts and poles, and firewood cutting and hazard tree removal along roads and trails have and will continue to have little effect on stand structure and size class distribution except within small localized settings. Christmas tree cutting generally selects for healthy open growth fir saplings that may have otherwise grown into midstory or overstory trees; however, cutting is concentrated in a narrow band along roadways accessible in November and December.

The fisher analysis area is open for use by the public. Ongoing recreation use may consist of camping, fishing, hiking, hunting, mountain biking, OHV use, pleasure driving, and wildlife watching. Recreational use is expected to continue at the current rate. These activities at the current rate are expected to have a minimal effect on fishers and late and mid seral closed canopy coniferous forest habitat. Ongoing forest management activities may include trail maintenance, road maintenance, rust resistant sugar pine enhancement, and invasive plant treatments. These activities are not expected to increase, however, leading to an existing condition not expected to change. 32 miles of non-system routes, including user-made trails present throughout the project area, are set to be decommissioned, with the exception of retainment of trails around the new proposed parking lots. The decommissioning would improve conditions for fishers due to a reduction in human disturbance.

No other future activities are planned on Forest Service lands in the fisher analysis area other than the West Shore Project. On private lands, however, activities are planned. Most notably, 931 acres, approximately 22% of the fisher home range, are planned for group selection. As mentioned previously, the clearing of acreage for group selection results in an environment that fishers avoid. Planting that

commonly occurs after clearing would not provide appropriate habitat for the fisher. Other planned activities include 11 acres planned for shelterwood removal and commercial thinning, as well as 6 acres planned for aspen, meadow, or wet area restoration.

Proposed Action – Summary of direct, indirect, and cumulative effects, and viability determination

In the long-term, Alternative 1 would accelerate the project area's existing condition toward more suitable fisher habitat through the creation of a more complex forest structure and the cultivation of conditions that would encourage the growth of trees to a large size at a faster rate than what is seen under current conditions. The reduction in the probability of stand-replacing wildfire, which could render the area unusable for the species if it were to occur, would decrease. 5,216 acres are proposed for silviculture and fuels treatments. Considering that an average male home range is 15,382 acres, an area less than 1 male home range would be affected. Effects to an average female home range, 4,200 acres, would also be minimal as no more than 2 female fishers could be affected. Thus, the proposed activities in Alternative 1 for the West Shore Project **may affect individual Pacific fishers (MAI)**, but are not likely to result in a trend towards federal listing or loss of species viability.

No Action

Direct, Indirect, and Cumulative Effects, and viability determination

The implementation of Alternative 2, the No Action Alternative, **may affect individual Pacific fishers (MAI),** but it is not likely to result in a trend towards federal listing or loss of species viability. Vegetation would continue to grow along current trajectories, leading to even denser conditions which are preferred by the fisher for denning and foraging habitat. Risk of stand-replacing wildfire would continue to rise in increasingly dense stands with high fuel loads, although wildfire could increase the number of snags and logs, habitat features that fishers prefer. Trees in overstocked stands would continue to take longer to grow into large trees, a habitat component necessary for resting and denning. High quality habitat would struggle to become abundant as few trees in the project area are large enough to provide needed habitat functions for the species. Lower quality foraging habitat would continue to dominate the project area over the short- to mid-term.

Management Indicator Species

The bioregional scale monitoring strategy for the LNF's and PNF's MIS is found in the Sierra Nevada Forests Management Indicator Species Amendment (SNF MIS Amendment) Record of Decision (ROD) of 2007 (USDA Forest Service 2007a). Bioregional scale habitat monitoring is identified for all twelve of the terrestrial MIS. The current bioregional status and trend of populations and/or habitat for each of the MIS is discussed in the 2010 Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2010a). The MIS selected for project-level MIS analysis for the West Shore Project were fox sparrow, Pacific tree (chorus) frog, mountain quail, sooty grouse, California spotted owl, Pacific marten, northern flying squirrel, and hairy woodpecker. The largest changes to available habitat in the project area would be the decrease in mid seral coniferous forest habitat (mountain quail habitat) and the increase in late seral open canopy coniferous forest habitat (sooty grouse habitat). The effects of the West Shore Project on habitat for the selected Project-level MIS are summarized below, and detailed analysis is available in the MIS Report.

Table 9. Summary of pre- and post-treatment MIS habitat

Pre-treatment MIS Habitat – Acres (same as No Action)	Post Treatment MIS Habitat – Acres – Alt. 1	Change in MIS Habitat Acres

Pre-treatment MIS Habitat – Acres (same as No Action)	**Post Treatment MIS Habitat – Acres – Alt. 1**	**Change in MIS Habitat Acres**
Shrubland, west-slope chaparral types – 217	Shrubland, west-slope chaparral types – 217	0
Wet Meadow – 37	Wet meadow – 37	0
Coniferous Forest, early seral – 167	Coniferous Forest, early seral – 118	-49
Coniferous Forest, mid seral – 5,429	Coniferous Forest, mid seral – 3,986	-1,443
Coniferous Forest, late seral, open canopy – 109	Coniferous Forest, late seral, open canopy – 1,446	+1,337
Coniferous Forest, late seral, closed canopy – 267	Coniferous Forest, late seral, closed canopy – 420	+153
CWHR not included in MIS Habitat – 34	CWHR not included in MIS Habitat – 34	0

Migratory Birds

The West Shore Project is located within the Sierra Nevada Bird Conservation Region (BCR)[5]. Eleven species of Birds of Conservation Concern were identified for this BCR, which include: bald eagle, peregrine falcon, flammulated owl, spotted owl, black swift, calliope hummingbird, Lewis' woodpecker, Williamson's sapsucker, olive-sided flycatcher, willow flycatcher, and Cassin's finch. Of these, bald eagles and spotted owls (California spotted owl) were addressed in this project's Biological Evaluation (BE). Sierra Nevada BCR species that were not addressed in the BE or the MIS that may be present within the project area include: peregrine falcon, flammulated owl, calliope hummingbird, Lewis' woodpecker, Williamson's sapsucker, olive-sided flycatcher, and Cassin's finch. The willow flycatcher does not have appropriate habitat within the project area, and the project area is out of the habitat range for the black swift.

While disturbance is expected during thinning and post-thinning treatments, peregrine falcon, calliope hummingbird, and Lewis's woodpecker all select for open forested areas. Treated stands would provide improved habitat quality for these species after treatments as stands would be less dense. The olive-sided flycatcher prefers forests with open edge habitat, including snags.

Snag retention standards within harvest units would serve to mitigate impacts to flammulated owls, Lewis' woodpecker, and Williamson's sapsucker, and tall retained snags would provide foraging perches

[5] To facilitate a regional approach to bird conservation, regional geographic units called Bird Conservation Regions (BCRs) were developed under the North America Bird Conservation Initiative (http://www.nabci-us.org/bcrs.html). BCRs encompass landscapes with similar bird communities, habitats, and resource issues. In *Birds of Conservation Concern 2008*, BCR-specific Birds of Conservation Concern (BCC) were identified by the USFWS (2008) that are in greatest need of conservation action and proactive management to prevent the need to list them as endangered or threatened.

for olive-sided flycatchers. The Williamson's sapsucker relies on open coniferous forests, namely dominated by Ponderosa pine, for its breeding habitat; the amount of suitable habitat would increase and improve after treatment activities. Also, the Cassin's finch selects for mature forest habitat throughout the Intermountain West. More mature, complex forest structure would have the capacity to establish as remaining trees in more open stands grow to large sizes needed in mature habitat. Sierra Nevada BCR species' habitat preferences would become more available over the long-term, and stand-replacing wildfire risk would decrease.

The project actions provides increased long-term resiliency through fuels reduction. Remaining trees should experience improved resiliency due to less constrained soil, water, and sunlight resources, which would reduce the chance of tree mortality from drought, insects, wildfire, and constrained resources. Snag and log retention standards preserve desired habitat characteristics. In addition, the LOPs pertaining to California spotted owl and northern goshawk combined encompass the majority of the project area.

The proposed action also considered the importance of understory vegetation and other vegetative communities in the project area. Natural regeneration will occur after thinning and post-thinning silviculture and fuels treatments, which, over the long-term, will result in a heterogeneous pattern of forest seral stages and wildlife habitat diversity within treated stands. The project's design features, including snag retention, would help ensure that a diversity of migratory bird habitats is retained and created within the West Shore Project area.

Reducing the risk of stand-replacing wildfire and reestablishing a healthy fire regime will improve overall habitat conditions for migratory birds. Silviculture and fuels treatments would result in an increase in habitat diversity throughout the project area, leading to more habitat availability for a multitude of avifauna. Treatment activities would also work to protect intact older habitats within the project area, leading to the preservation of these habitats for migratory bird use.

Great Blue Heron

At the southeastern end of the project area within the Plumas National Forest is a Great Blue Heron rookery. The Canyon Dam Great Blue Heron rookery is the only rookery on the Mt. Hough Ranger District. A limited operating period (LOP) would be maintained from February 15 through July 31 that would prohibit actions that may disturb birds during breeding season. The LOP would prohibit project activities within 0.25 miles of the rookery. During the LOP, no thinning activities would take place within the vicinity of the rookery.

Osprey

Five active osprey nests are located in the southern portion of the project within the Plumas National Forest. For osprey nest territories, an LOP will be maintained prohibiting actions within approximately 0.3 miles of any active nest tree during the breeding season (March 1 through August 31). This LOP will prohibit project activities that could disturb nesting osprey. The Plumas National Forest LMRP indicates that appropriate habitat should be maintained for at least 32 osprey territories, as well as maintaining the suitability of nesting territories (PNF LRMP, 1988).

Aquatic Biological Resources

Species or critical habitat that may occur in the action area or, be affected by activities associated with the proposed action and alternatives were reviewed. No federally threatened or endangered species and no Forest Service sensitive species are known or suspected to occur in the project area. None of these species should be affected by either of the alternatives considered here.

Agencies or Persons Consulted

The Forest Service consulted the following Federal, State, tribal, and local agencies during the development of this EA. In addition to the entities listed here, Appendix A contains additional information on the collaborative efforts in the project development.

Federal and State Agencies Consulted

- US Fish and Wildlife Service
- CA State Historic Preservation Office

Tribal Interests

The following tribal interests were mailed scoping packets during the scoping process in the fall of 2019.

- Greenville Rancheria
- Susanville Indian Rancheria
- Mechoopda Indian Tribe of Chico Rancheria
- Redding Rancheria
- Pit River Tribe
- Maidu Summit Consortium & Conservancy
- Maidu Cultural Preservation Association

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Appendices

Appendix A: Collaboration

Appendix B: Project Maps

Appendix C: Integrated Design Features

Appendix A: Collaboration

The West Shore Project has been developed as a pilot public-private partnership to increase the pace, scale and efficacy of forest and watershed restoration in the Sierra Nevada and southern Cascades. The project was developed through a California Climate Investment grant from the California Department of Forestry and Fire Protection (CALFIRE). Planning for the West Shore Project was a collaborative process involving the following partners that comprise the West Shore Project Interdisciplinary Team (IDT):

- USFS Lassen National Forest: Almanor Ranger District and Supervisor's Office
- Sierra Institute for Community and Environment
- Dogwood Springs Forestry

The West Shore Project IDT hosted a public field trip to provide insight and answer questions about the project in the initial phase of the planning process. The IDT incorporated comments from the 2019 and 2020 scoping efforts into the proposal. In response to scoping comments the team adjusted the proposed action, discussed avenues for additional analysis, and provided explanations for not including the suggestions.

Ranking as one of the highest priority projects on the Lassen National Forest, the West Shore Project is supported by members of the South Lassen Watersheds Group (SLWG), a diverse group of local partners collaborating on multi-jurisdictional, large-scale projects to improve forest and watershed health, reduce wildfire risk, protect critical habitat, and support local economies. Members of the SLWG include:

- Lassen National Forest
- Lassen Volcanic National Park
- Feather River RCD
- Maidu Summit Consortium
- Lake Almanor Watershed Group
- Lassen Forest Preservation Group
- Tehama County RCD
- Butte County RCD
- Point Blue Conservation Science
- Sierra Nevada Conservancy
- The Nature Conservancy
- Sierra Pacific Industries
- Collins Pine Company
- Almanor Recreation and Parks District
- Plumas Corporation
- Cal Fire LMU
- AWCC Firewise Communities
- Deer Creek Resources
- Mountain Meadows Conservancy
- Natural Resources Conservation Service
- Trout Unlimited - Feather River
- Plumas County Board of Supervisors
- Susanville Indian Rancheria
- Feather River Land Trust
- Pacific Gas & Electric
- U.S. Fish and Wildlife Service
- Deer Creek Watershed Conservancy
- Mill Creek Conservancy
- Battle Creek Watershed Conservancy

Appendix B: Project Maps

Appendix C: Integrated Design Features

The following integrated design features are resource protection measures that are developed by specialists to reduce or eliminate any unwanted environmental effects. They are project specific and incorporated as part of the proposed action in addition to best management practices (BMPs). Integrated design features ensure the project is consistent with Lassen Forest Plan standards and guidelines as well as other laws, regulations, and policies. These integrated design features are parameters that will be incorporated into treatments and contracts or agreements, or used to guide Forest Service personnel in conducting implementation.

Aquatics and Watershed:

Riparian Conservation Areas

Equipment restriction zones would be established within Riparian Conservation Areas (RCAs). RCAs are composed of wetlands, meadows, lakes, springs, and seasonal and perennial streams and the land adjacent to those features. Table 1014 shows the designated width of the RCAs as measured from the edge of the aquatic feature and the equipment restriction zone width.

Table 10. Riparian conservation area widths and mechanical restriction zones (measured from the edge of the aquatic feature).

Aquatic Feature	**RCA width**	**Ground-based mechanical equipment restriction zone**	
		Slope 20% or less	**Slope greater than 20%**
Perennial stream	300 feet	50 feet	150 feet
Seasonal stream	150 feet	25 feet	50 feet
Lake, wetland, wet meadow	300 feet	No distance exclusion zone, see IDF #4, 9, 10, 11, and 16.	
Springs	300 feet	10 feet	50 feet
Vernal Pools	300 feet	Variable	300 Feet

1. Hand felling within the RCA, including within the mechanical restriction zone, would be permitted.
2. Riparian species (aspen, cottonwood, alder, willow, dogwood, etc.) would not be cut or removed.
3. Stream bank stability trees would be identified by a qualified specialist prior to RCA treatments. Stream bank stability trees would not be felled unless they pose a safety risk, in which case they would be felled and left in place.
4. Soils in the RCA and in meadow treatment areas would be dry to a depth of 10 inches prior to equipment entry. If over-snow treatments are utilized, snow conditions and depth would be sufficient to protect soils from compaction.

5. Turning of mechanical equipment within RCA would be kept to a minimum.
6. All firing operations entering RCAs shall be backing fires.
7. There would be no crossing of perennial streams by mechanical equipment. Crossings of seasonal stream channels would be designated by a qualified specialist prior to implementation. Following use of these specified crossings, a qualified specialist would assess the site for potential repair and/or restoration needed.
8. Skid trails within RCAs would be kept to a minimum. No waterbars would be installed on skid trails within RCAs following treatment.
9. Skid trails within RCAs, but not in the footprint of a meadow, would require 90 percent ground cover following project implementation.
10. Skid trails within meadows would be placed in areas agreed upon by a qualified specialist in conjunction with the Timber Sale Administrator.
11. After implementation, skid trails in meadows would be evaluated by a qualified specialist for detrimental compaction. Locations that are detrimentally compacted would be remediated with an appropriate technique.
12. No cut and fill would be allowed for new skid trails within RCAs.
13. Where mechanical equipment is used to fell timber within RCAs, one-end suspension would be used to remove felled timber where feasible. If one-end suspension is not feasible, end lining would be permitted as long as objectives for 90 percent groundcover on non-rocky riparian soils are met.
14. End lining of material would be permitted within RCAs with slopes greater than 20 percent, but would not be permitted within 25 feet of any continuous scour channels.
15. No piling of material for burning would occur within 25 feet of an aquatic feature or a meadow edge. If piles for burning cover more than 10 percent of the RCA in a unit, only one-third of the piles would be burned in any given year to avoid impacting the nearby riparian environment.
16. No landings would be placed within meadows.
17. There would be no construction of new landings or use of old or existing landings within an RCA without concurrence by a qualified specialist. Landings would not be within 25 feet of the existing riparian or meadow vegetation. Landings within RCAs would be decommissioned following project implementation and a qualified specialist would evaluate them for compaction or erosion potential. Mitigations may include obliteration of the landing, spreading of native seed, mulch, woody debris, or certified weed-free straw.
18. 30% or more of the acres proposed for treatment in the Lower West Shore Lake Almanor subwatershed will not be treated before 2025. 30% or more of the acres proposed for treatment in the Upper West Shore Lake Almanor subwatershed will not be treated before 2026.
19. If streamflow is greater than or equal to 4.0 cubic feet per second, the water drafting rate should not exceed 350 gallons per minute.

20. If streamflow is less than 4.0 cubic feet per second, the water drafting rate should not exceed 20 percent of the streamflow.
21. Water drafting sites would be brought up to Best Management Practices (BMP) standards. Water drafting would cease when bypass surface flows drop below 2.0 cubic feet per second.

Botany

Threatened, Endangered and Sensitive Plant Species

22. All vernal pools and their associated critical habitat would be flagged and avoided by all ground disturbing activities and displayed as control areas on contract maps.
23. Prescribed fire operations adjacent to vernal pools when pools are dry will only occur if firelines are located at or beyond the mechanical exclusion zone widths for each pool. Firelines are not required in the spring when pools are wet.
24. Only hand treatment methods would be allowed in the vernal pool mechanical exclusion zones. Trees would be lopped and scattered or removed and piled outside of these areas. In addition, all trees will be directionally felled away from the pools.
25. Unauthorized routes ULA132, UZ16, UZ18, UZ19, UZ20 and UMN894 will not be used during implementation activities within the mechanical exclusion zones for vernal pools. Ground disturbing decommissioning activities will also not occur within this area.
26. All known occurrences of *Lupinus dalesiae* (Quincy lupine) and *Lewisia kelloggii* ssp. *hutchisonii* (Hutchison's lewesia) would be protected from project activities through flag and avoid methods and displayed as control areas on contract maps.
27. Unauthorized routes UMN914, ULA026, UMN952 and UZ32 would not be used as temp roads during implementation. Decommissioning activities will avoid known locations of *Lupinus dalesiae* and L*ewisia kelloggii* ssp. *hutchisonii* within and adjacent to these routes.
28. All ground-disturbing activities would be excluded from within 50 feet of occurrences of *Botrychium* species and all incense cedar would be retained within 150 feet. Locations would be displayed as control areas on all contract maps. No ignitions would occur within occurrences of *Botrychium* species; however, prescribed fire would be permitted to back in to the site.
29. Where *Duplacus pygmaeus* (pygmy monkeyflower) occurs in mechanical treatment units, ground-disturbing activities would occur after June 30, or when soil is visibly dry at the surface. All piles would be placed outside of these areas.
30. Only hand thinning would be allowed within mechanical equipment exclusion zones around known occurrences of *Cypripedium fasciculatum* (clustered lady's slipper) and its associated dogwood patches. No piles would be placed within 25 feet of these areas and all occurrences would be avoided by prescribe fire activities. These sites would be protected by flag and avoid methods and displayed as control areas on contract maps.
31. Trees will be directionally felled away from known occurences of *Cypripedium fasciculatum* as well as dogwood patches with RCAs and drainages to protect potential habitat. In addition, no piles will be placed within 25 feet of dogwood patches within RCA's and drainages.

32. New occurrences of TES plant species discovered before or during ground-disturbing activities would be protected through flag and avoid methods or measures similar to those described above.

Table 11. Mechanical entry exclusion zone widths for TES plant species within the West Shore Project.

LNF occurrence number	Exclusion Zone Width	Location within West Shore Project Area
Orcuttia tenuis #5 A-C	Variable based on mapped topographic break	Almanor Group Campground vernal pool complex.
Orcuttia tenuis #22	100-300 feet	SW of Prattville.
Cypripedium fasciculatum #2	50 feet	SW of Rocky Point along 27N97

Invasive Plant Species

33. All off-road equipment would be weed-free prior to entering the Forest. Staging of equipment would be done in weed free areas.

34. Known noxious weed infestations would be identified, flagged where possible, and mapped for this project. Locations would be displayed on contract maps. Identified invasive plant species' sites within or adjacent to the project area containing isolated patches with small plant numbers would be treated (hand pulled or dug) by forest botany staff prior to project implementation and avoided. Any larger or unpullable infestations would be avoided by harvesting equipment or equipment used would be washed on site before leaving the infested area and entering un-infested areas to prevent spreading invasive plants across the project area.

35. New small infestations identified during project implementation would be evaluated and treated according to the species present and project constraints and avoided by project activities. If larger infestations are identified after implementation, they would be isolated and avoided by equipment, or equipment used would be washed after leaving the infested area and before entering an uninfested area.

36. Post project monitoring for implementation and effectiveness of treatments and control of new infestations would be conducted as soon as possible and for a period of multiple years after completion of the project.

37. If project implementation calls for mulches or fill, they would be certified weed-free. Seed mixes used for re-vegetation of disturbed sites would consist of locally-adapted native plant materials to the extent practicable.

Cultural Resources

38. Cultural Resource protection is managed through the Programmatic Agreement (PA) among the U.S.D.A. Forest Service, Pacific Southwest Region (Region 5), California State Historic Preservation Officer, Nevada State Historic Preservation Officer, and the Advisory Council on Historic Preservation Regarding the Processes for Compliance with Section 106 of the National Historic Preservation Act for Management of Historic Properties by the National Forests of the Pacific Southwest Region (2013).

    Cultural Resources within the West Shore Project area of potential effect (APE) would be protected during project implementation utilizing the following Approved Standard Protection Measures.

    Heritage Program Manager (HPM) /District Heritage Program Specialist (DHPS) shall exclude historic properties from areas where activities associated with undertakings will occur, except where authorized below.

    1.1 Proposed undertakings shall avoid historic properties. Avoidance means that no activities associated with undertakings that may affect historic properties, unless specifically identified in this PA, shall occur within historic property boundaries, including any defined buffer zones (see clause 1.1(a), below). Portions of undertakings may need to be modified, redesigned, or eliminated to properly avoid historic properties.

    (a) Buffer zones may be established to ensure added protection where HPM/DHPS determine that they are necessary. The use of buffer zones in avoidance measures may be applicable where setting contributes to property eligibility under 36 CFR 60.4, or where setting may be an important attribute of some types of historic properties (e.g., historic buildings or structures with associated historic landscapes, or traditional cultural properties important to Indians), or where heavy equipment is used in proximity to historic properties.

    (1) The size of buffer zones must be determined by HPMs or qualified Heritage Program staff on case-by-case bases.

    1.2 Activities within historic property boundaries will be prohibited with the exception of using developed Forest transportation systems when the HPM or qualified heritage professional recommends that such use is consistent with the terms and purposes of this agreement, where limited activities approved by the HPM or qualified heritage professional will not have an adverse effect on historic properties, or except as specified below in sections 2.0 and 3.0 of Appendix E.

    associated activities that have the potential to affect historic properties.

    (1) Historic property boundaries shall be delineated with coded flagging and/or other effective marking.

    (2) Historic property location and boundary marking information shall be conveyed to appropriate Forest Service administrators or employees responsible for project implementation so that pertinent information can be incorporated into planning and implementation documents, contracts, and permits (e.g., clauses or stipulations in permits or contracts as needed).

    1.4 When any changes in proposed activities are necessary to avoid historic properties (e.g., project modifications, redesign, or elimination; removing old or confusing project markings or engineering stakes within site boundaries; or revising maps or changing specifications), these changes shall be completed prior to initiating any project activities.

1.5 Monitoring by heritage program specialists may be used to enhance the effectiveness of protection measures. The results of any monitoring inspections shall be documented in cultural resources reports and the Infra database.

2.0 Class II: On-Site Historic Property Protection Measures

HPM/DHPS may provide written approval for an undertaking's activities within or adjacent to the boundaries of historic properties based on professional judgment that such activities will not have an adverse effect on historic properties, or under carefully controlled conditions such as those specified below. All activities performed under Section 2.0 (Standard Protection Measures) must be documented in inventory or other Heritage Program Reports (HPMs), or other compliance reports prepared pursuant to this PA.

2.1 The following historic property protection measures may be approved for undertakings under the conditions detailed below:

(d) Placement of barriers within or adjacent to site boundaries to prevent access to or disturbance of deposits or historic features, or for protection of other sensitive resources on-site, when such barriers do not disturb subsurface deposits or lead to other effects to the site.

(1) Non-intrusive barriers: wooden and other barriers anchored with rebar; rocks/boulders or other items placed on the surface; weed-free straw bales or straw bales anchored with rebar; or other nonintrusive barriers approved by HPMs or qualified Heritage Program staff.

2.2 The following activity-specific standard protection measures may be approved by HPM/DHPS under the conditions specified below:

(a) Felling and removal of hazard, salvage, and other trees within historic properties under the following conditions:

(1) Trees may be limbed or topped to prevent soil gouging during felling;

(2) Felled trees may be removed using only the following techniques: hand bucking, including use of chain saws, and hand carrying, rubber-tired loader, crane/self-loader, helicopter, or other non-disturbing, HPM approved methods;

(3) Equipment operators shall be briefed on the need to reduce ground disturbances (e.g., minimizing
turns);

(4) No skidding nor tracked equipment shall be allowed within historic property boundaries; and

(5) Where monitoring is a condition of approval, its requirements or scheduling procedures should be included in the written approval.

(b) For fire, and hazardous fuels and vegetation management projects, HPM/DHPS , in conjunction with fuels, vegetation management, or fire specialists as necessary, shall develop treatment measures for at risk historic properties (as defined in SHPO approved Region 5 modules and agreements) designed to eliminate or reduce potential adverse effects to the extent practicable by utilizing methods that minimize surface disturbance, and/or by planning project activities in previously disturbed areas or areas lacking cultural features.

(1) The following standard protection measures apply to fire, hazardous fuels, and vegetation management projects:

(A) Fire crews may monitor sites to provide protection as needed.

(B) Fire lines or breaks may be constructed off sites to protect at risk historic properties.

(C) Vegetation may be removed and fire lines or breaks may be constructed within sites using hand tools, so long as ground disturbance is minimized, and features are avoided, as specified by HPMs or qualified Heritage Program staff during fire emergencies (see Stipulation 7.11).

(D) Fire shelter fabric or other protective materials or equipment (e.g., sprinkler systems) may be utilized to protect at risk historic properties.

(E) Fire retardant foam and other wetting agents may be utilized to protect at risk historic properties and in the construction and use of fire lines.

(F) Surface fuels (e.g., stumps or partially buried logs) on at risk historic properties may be covered with dirt, fire shelter fabric, foam or other wetting agents, or other protective materials to prevent fire from burning into subsurface components and to reduce the duration of heating underneath or near heavy fuels.

(G) Trees that may impact at risk historic properties should they fall on site features and smolder can be directionally felled away from properties prior to ignition or prevented from burning by wrapping in fire shelter fabric or treating with fire retardant or wetting agents.

(H) Vegetation to be burned shall not be piled within the boundaries of historic properties unless locations (e.g., a previously disturbed area) have been specifically approved by HPMs or qualified Heritage Program staff.

(I) Mechanically treated (crushed/cut) brush or downed woody material may be removed from historic properties by hand, through the use of off-site equipment, or by rubber-tired equipment approved by HPMs or qualified Heritage Program staff. Ground disturbance shall be minimized to the extent practicable during such removals.

(J) Woody material may be chipped within the boundaries of historic properties so long as the staging of chipping equipment on-site does not affect historic properties and staging areas are specifically approved by HPMs or qualified Heritage Program staff.

(K) HPMs shall approve the use of tracked equipment to remove brush or woody material from within specifically identified areas of site boundaries under prescribed measures designed to prevent or minimize effects. Vegetative or other protective padding may be used in conjunction with HPM authorization of certain equipment types within site boundaries.

(2) HPMs or qualified Heritage Program staff shall determine whether fire, prescribed fire, or mechanical equipment treatments within site boundaries shall be monitored, and how such monitoring shall occur.

(3) Use of any standard protection measures on historic properties for fire, hazardous fuels, and vegetation experimental mechanical treatments shall be documented in heritage program reports, detailing equipment type, extraction techniques, conditions of use, environmental conditions, project results, effectiveness of protection measures, need for changes, and recommendations for future use.

When any changes in proposed activities are necessary to avoid historic properties (e.g., project modifications, redesign, or elimination; removing old or confusing project markings or engineering stakes within site boundaries; or revising maps or changing specifications), these changes shall be completed prior to initiating any project activities. PA Appendix E section 1.4.
If cultural resources are identified during project implementation (unanticipated discovery) all work would cease immediately in that area until the situation is reviewed and an assessment and mitigation plan instituted to insure protection of the site. PA section 7.10 .

If the Standard Protection Measures cannot provide appropriate protection, the undertaking shall be subject to the provisions of 36 CFR 800.

Fuels

39. Hand and machine piles would not be placed in locations that would result in the mortality of surrounding trees when piles are ignited.

40. All prescribed fire, including pile burning and underburning would be completed under an approved prescribed burn plan.

41. Two parcels of Collins Pine Company land were analyzed for cross-boundary prescribed burning as part of this project and are located in T27N R7E Sections 3 and 4. Cross-boundary burning would occur in accordance with Provisions 27, 31, and 40 of the 2018-2023 California Fire Management Agreement (CFMA). CFMA authorizes the cooperative use of agency resources for the purposes of performing prescribed fire or other fuels management related projects supporting prescribed fire. The Supplemental Agreement for Cooperative Use of Prescribed Fire (Exhibit F of the CFMA) will be utilized for any cross boundary burning.

42. Any constructed control lines would be rehabilitated after burns have been completed and declared out by the appropriate fire and fuels personnel, unless the control line is to be used in a subsequent prescribed burn.

43. All burning would be in compliance with California Ambient Air Quality Standards (CAAQS).

Recreation/Special Uses

44. Designated trails would be protected during project activities and impacts to the trail system would be minimized where possible. Where damaged by operations, trails would be restored to a standard condition for the designated use as described by the trail management objective for those trails.

45. Trails and roads accessing trailheads and day use areas would be kept open to the public and free of debris during implementation, within the limits of safety and operability.

46. Seasonal restrictions are in place for winter recreation (cross-country ski, snowmobile) from December 26 through March 31 annually for Plumas County roads 305, 307, and 309, and NFS road segment 27N03 near Almanor Picnic Area.

47. In addition to seasonal closures identified by the Travel Management, roads identified as open for public use may be temporarily closed via Forest Order during inclement weather to protect reconstruction investments until those roads have stabilized.

48. Forest roads and trails would be signed as needed for safety during project implementation.

49. All interpretive and wayfinding signage meets Forest Service universal accessibility guidelines.

50. Almanor North Campground, Almanor South Campground, Legacy Campground, Almanor RV Dump Station, Almanor Group Camp, Almanor Picnic Area, Almanor Tract Recreation Residences, Lake Almanor Recreation Trailhead at 27N52, 5 Mile Trailhead, and Dyer View Day Use Area would be treated prior to the Thursday before Memorial Day or after Labor Day.

51. Recreation-related infrastructure and improvements would be protected during activities.

52. Where they intersect roads or trails, fire control lines would be camouflaged after completion of the project to deter future use as trails.

Silviculture

53. Cut stumps of live conifers with a 14-inch and greater stump diameter would be treated with an Environmental Protection Agency (EPA)-approved borate compound which is registered in California for the prevention of annosus root disease. No EPA-approved borate would be applied within 25 feet of known Sensitive and Special Interest Plants or within 25 feet of live streams, meadow/wetlands, and vernal pools.

54. All sugar pine identified as rust resistant or as a candidate for rust resistance would be protected. A $20,000 fine would be imposed for each rust-resistant or candidate tree damaged during operations. Healthy sugar pine showing no observable signs of blister rust would be favorably retained.

Soils

55. Soil quality standards and appropriate best management practices (BMP) that protect forest soils would be implemented for the entire project. BMPs and soil standards are described in Water Quality Management for Forest System Lands in California, Best Management Practices (USDA FS 2011b), LNF LRMP (1993), and the 2004 SNFPA ROD.

56. In treatment units outside of RCAs, soil moisture conditions would be evaluated using Forest-established visual indicators before equipment operation proceeds. Lassen National Forest (LNF) Wet Weather Operations and Wet Weather Haul Agreements would be followed to protect the soil and transportation resources.

57. Areal extent of detrimental soil disturbance would not exceed 15 percent of the area dedicated to growing vegetation. Following implementation, the mechanical treatment units would be evaluated by a qualified specialist to determine if detrimentally compacted ground exceeds the LNF Land and Resource Management Plan standard of 15 percent areal extent. If restoration is needed to achieve compliance, an appropriate subsoiler, ripper or other implement would be used to fracture the soil in place leaving it loose and friable.

58. In mechanical treatment units, landings within treated areas no longer needed for long-term management would be evaluated by a qualified specialist to determine whether remediation is needed to restore productivity and hydrologic function. If so, appropriate remediation would be implemented. Where landing construction involved cut and fill, the landing would be re-contoured to match the existing topography.

59. Machine piling operations would remove only enough material to accomplish project objectives and would minimize the amount of soil being pushed into burn piles. Duff and litter layers would remain as intact as possible, and the turning of equipment would be minimized. Piles would be constructed as tall as possible, within limits of safety and feasibility. A mixture of fuel sizes in each pile is preferred, avoiding piles of predominately large wood when practicable.

60. To the extent possible, existing landings and skid trails would be used.

61. Mechanical equipment would not operate on slopes greater than 35 percent. Mechanical harvesting would be allowed in Unit 12 up to 45% slope. A qualified watershed specialist would be present to monitor initial implementation on slopes over 35%.

62. Where it exists, large woody material greater than 20 inches in diameter would be retained at a rate of at least five logs per acre.

Wildlife

Northern Goshawk

63. A northern goshawk limited operating period (LOP) from February 15 to September 15 would be applied within ¼ mile of all goshawk PACs or within ¼ mile of a nest if a nest is confirmed. The LOP may be lifted if it is determined that the PAC is not occupied.

64. If a northern goshawk nest is found within any of the proposed treatment units, the nest tree would be protected.

California Spotted Owls

65. A California spotted owl LOP from March 1st to August 15th would apply to stands within ¼ mile of all spotted owl PACs unless surveys confirm that spotted owls are not nesting. The LOP would be lifted after surveys if no nesting spotted owls are confirmed.

66. If a California spotted owl nest is found within any of the proposed treatment units, the nest would be protected.

Marten

67. If a marten den site is identified, a 100-acre area consisting of the highest quality habitat in a compact arrangement would be placed around the den site. The den site area would be protected from vegetation treatments with a limited operating period (LOP) from February 15 through July 31st as long as habitat remains suitable or until another Regionally-approved management strategy is implemented.

68. If a marten rest site (female or male) is found within a treatment unit, the rest site structure, (e.g., log, snag, tree) would be protected from being damaged during project implementation.

Fisher

69. If a fisher den site is identified, a 700-acre area consisting of the highest quality habitat in a compact arrangement would be placed around the den site. The den site area would be protected from vegetation treatments with a limited operating period (LOP) from March 1st through June 30th as long as habitat remains suitable or until another Regionally-approved management strategy is implemented.

70. Avoid fuel treatments in fisher den site buffers to the extent possible. If areas within den site buffers must be treated to achieve fuels objectives for the urban wildland intermix zone, limit treatments to mechanical clearing of fuels. Treat ladder and surface fuels to achieve fuels objectives. Use piling or mastication to treat surface fuels during initial treatment. Burning of piled debris is allowed. Prescribed fire may be used to treat fuels if no other reasonable alternative exists.

71. If a fisher rest site (female or male) is found within a treatment unit, the rest site structure, (e.g., log, snag, tree) would be protected from being damaged during project implementation.

72. For the 3 fisher detections in the project area: retain forested linkages with canopy cover greater than 40 percent (units 84, 102, & 305).

Wolves

73. A limited operating period (LOP) from March 1 through August 15 would be observed within 1 mile of areas of wolf activity IF indicative of a potential den location, known den sites, or pup rendezvous sites.

Bald Eagles

74. For bald eagle nest territories: maintain a LOP prohibiting actions within approximately 0.4 miles of any active nest tree during the breeding season (January 31 through August 31).

Osprey

75. For osprey nest territories: maintain a LOP prohibiting actions within approximately 0.3 miles of any active nest tree during the breeding season (March 1 through August 31).

Great Blue Heron

76. For Great Blue Heron Rookeries: maintain a LOP prohibiting actions that may disturb birds within approximately 0.25 miles of rookery during the breeding season (February 15 through July 31). During the LOP, no thinning activities would take place within the vicinity of the rookery.

Snags and Down Logs

77. In area thin and plantation treatment units, retain all snags larger than 15 inches dbh within the limits of safety and operability. To encourage snag recruitment, retain an average of two mid- and large diameter live trees per acre that are in decline, have defects, or desirable wildlife characteristics (e.g., teakettle branches, stick nests, large diameter broken top, cavities, and woodpecker excavations) where they exist.

78. 5 tons per acre of surface fuels greater than 3" diameter would be retained in the defense zone. In the threat zone, 10 tons per acre of surface fuel greater than 3" diameter would be retained. Material 12" diameter and greater would be prioritized for retention in both zones. A log approximately 20 feet in length and 26 inches diameter is approximately 1 ton.

Aspen and Oak

79. All aspen greater than 8 inches dbh would be protected during operations within the limits of safety and operability.

80. Landings would be placed outside of aspen stands if possible.